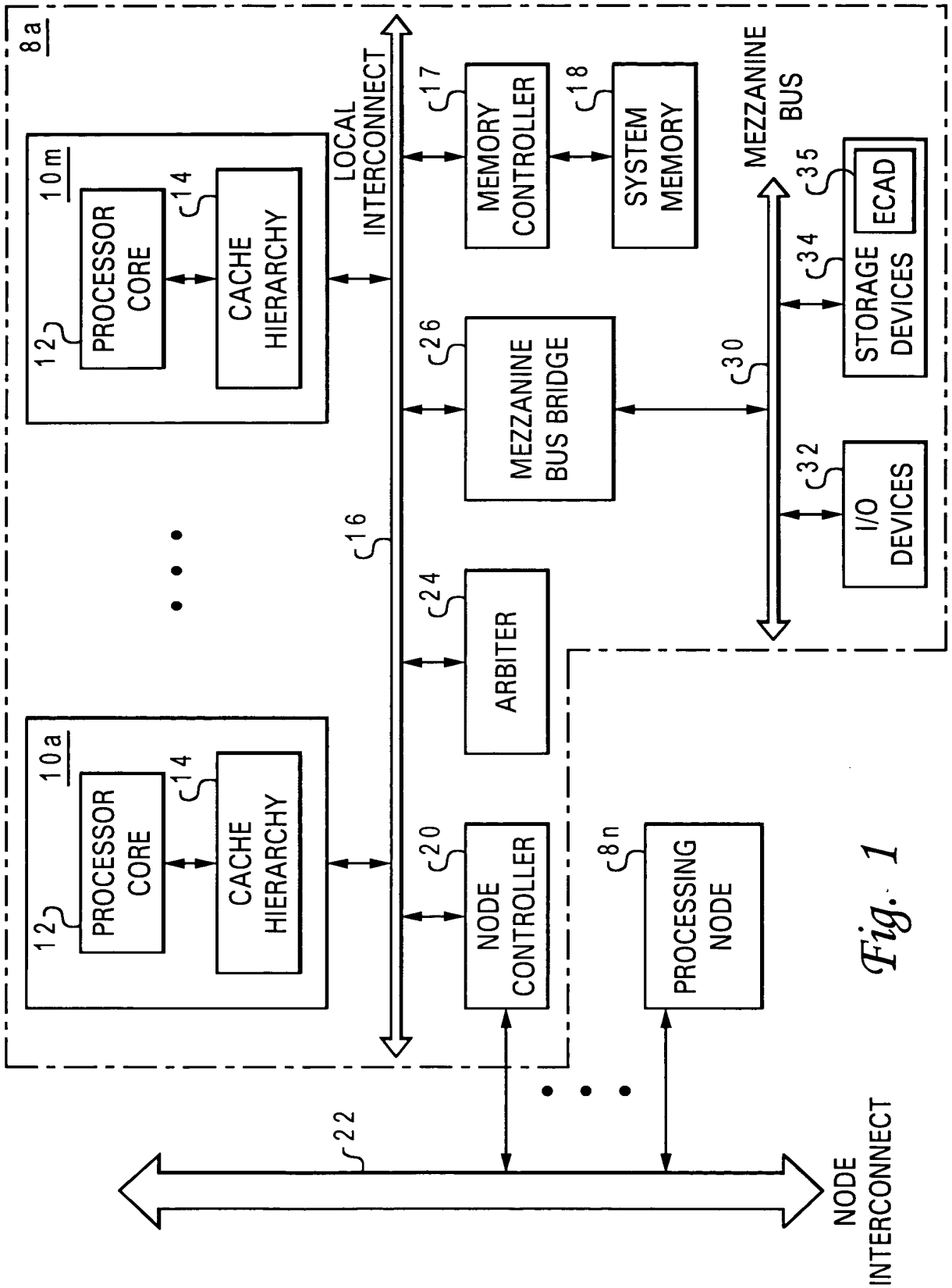

Fig. 1

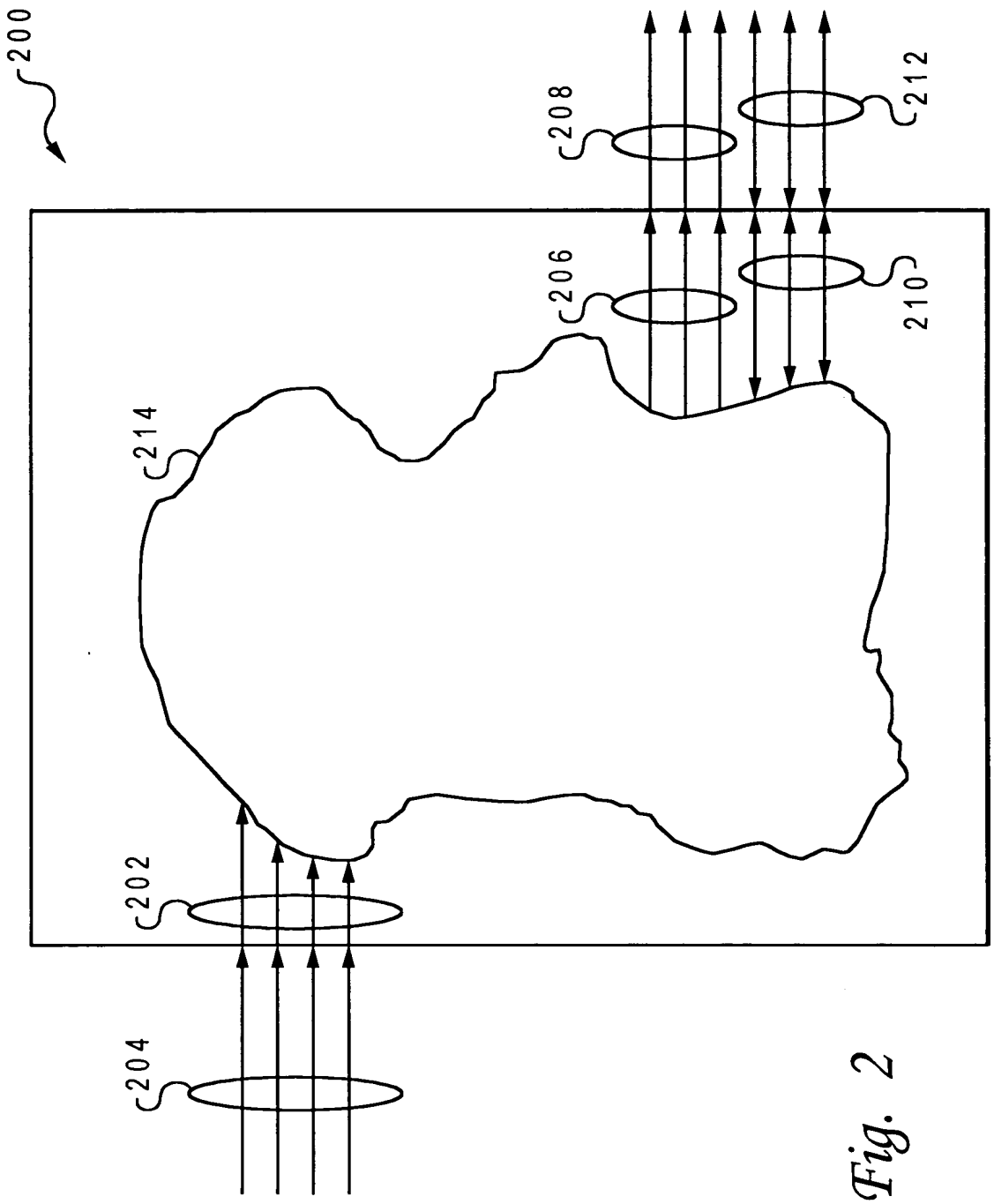

Fig. 2

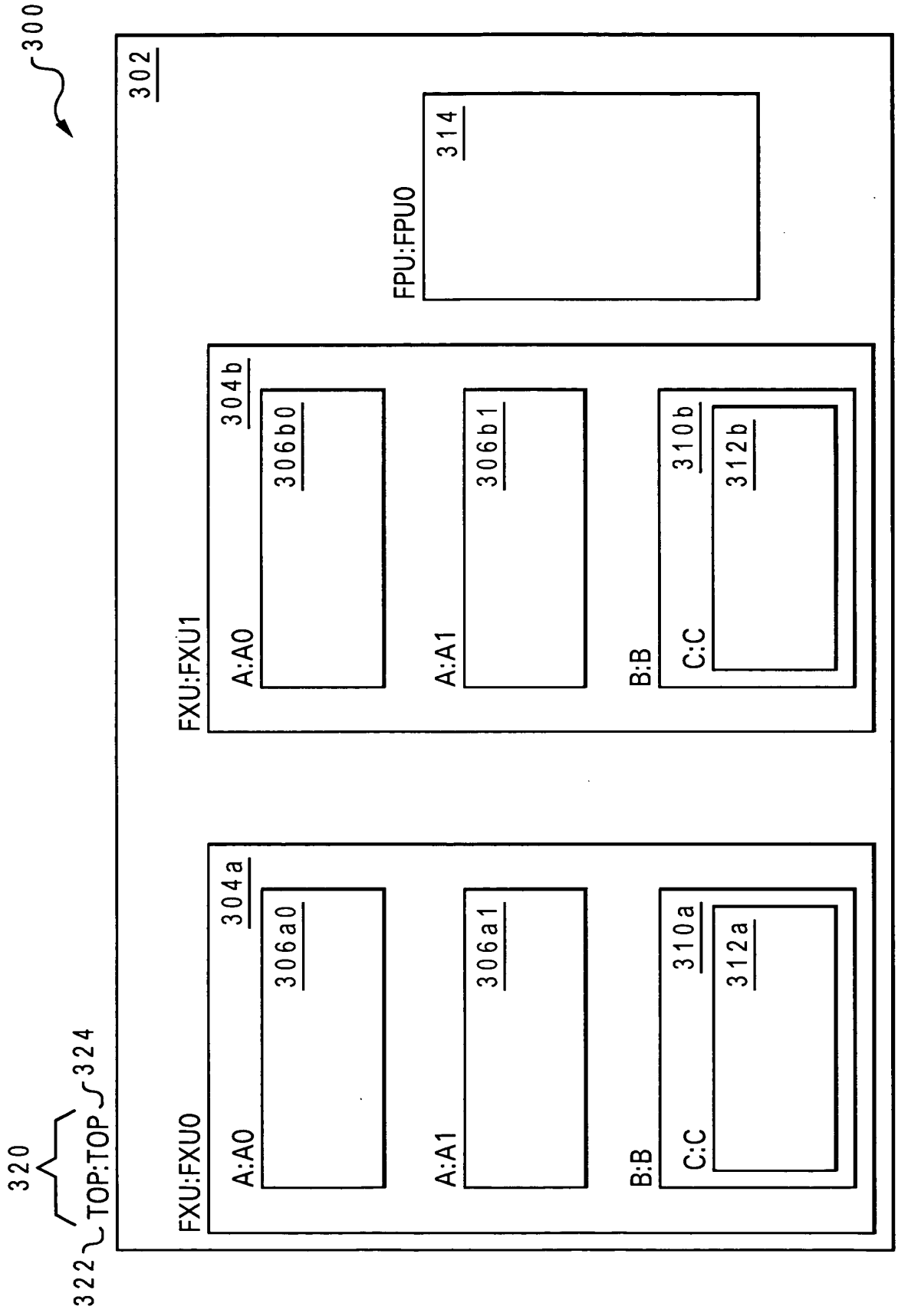
300
302
FXU:FXU0
A:A0
304a
306a0
A:A1
306a1
B:B
C:C
310a
312a
FXU:FXU1
A:A0
304b
306b0
A:A1
306b1
B:B
C:C
310b
312b
FPU:FPU0
314
320
TOP:TOP
324
322

Fig. 3

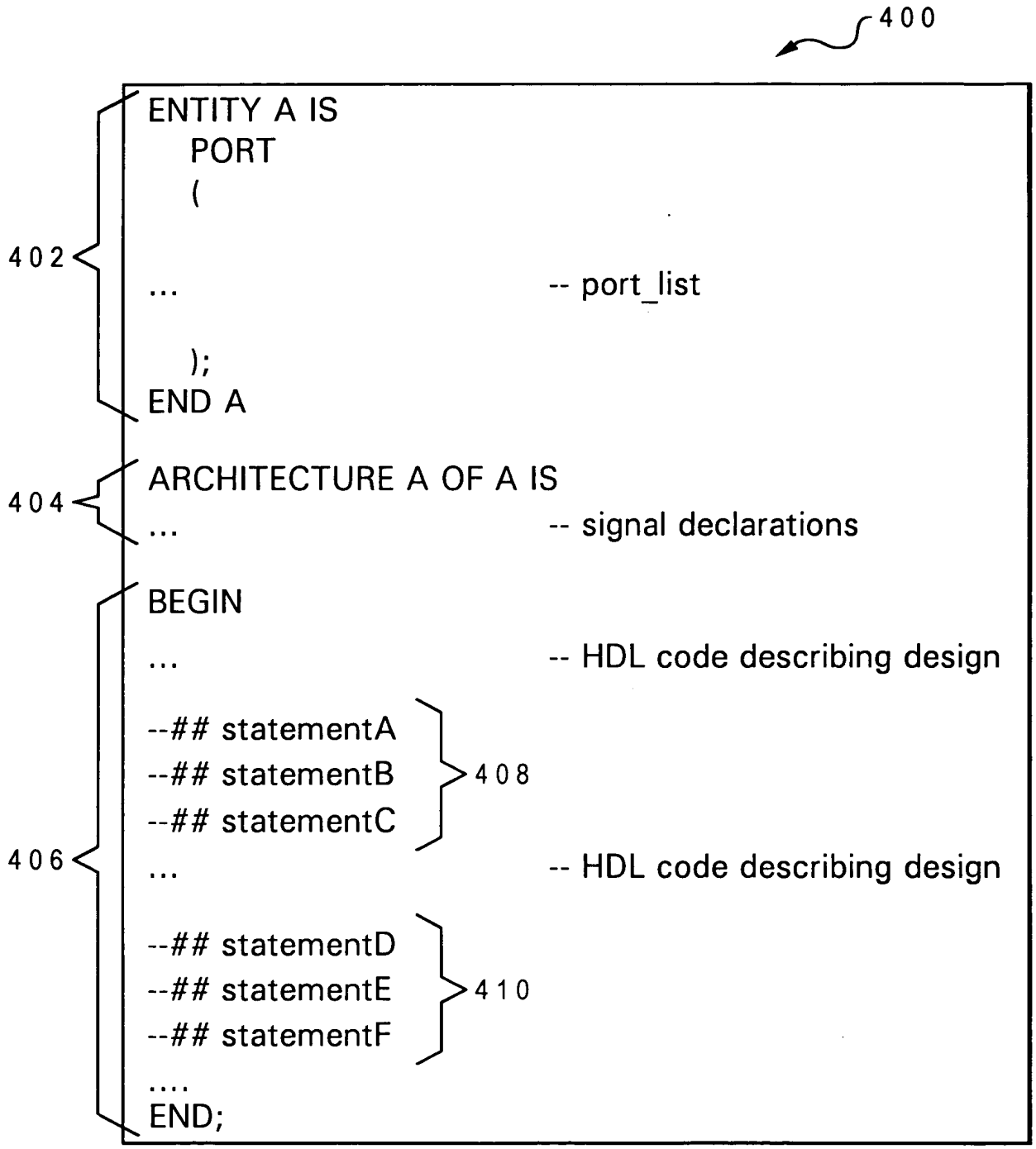
400
ENTITY A IS
PORT
(
...
-- port_list
);
END A
ARCHITECTURE A OF A IS
...
-- signal declarations
BEGIN
...
-- HDL code describing design
--## statementA
--## statementB
--## statementC
...
-- HDL code describing design
--## statementD
--## statementE
--## statementF
....
END;
402
404
406
408
410

Fig. 4A

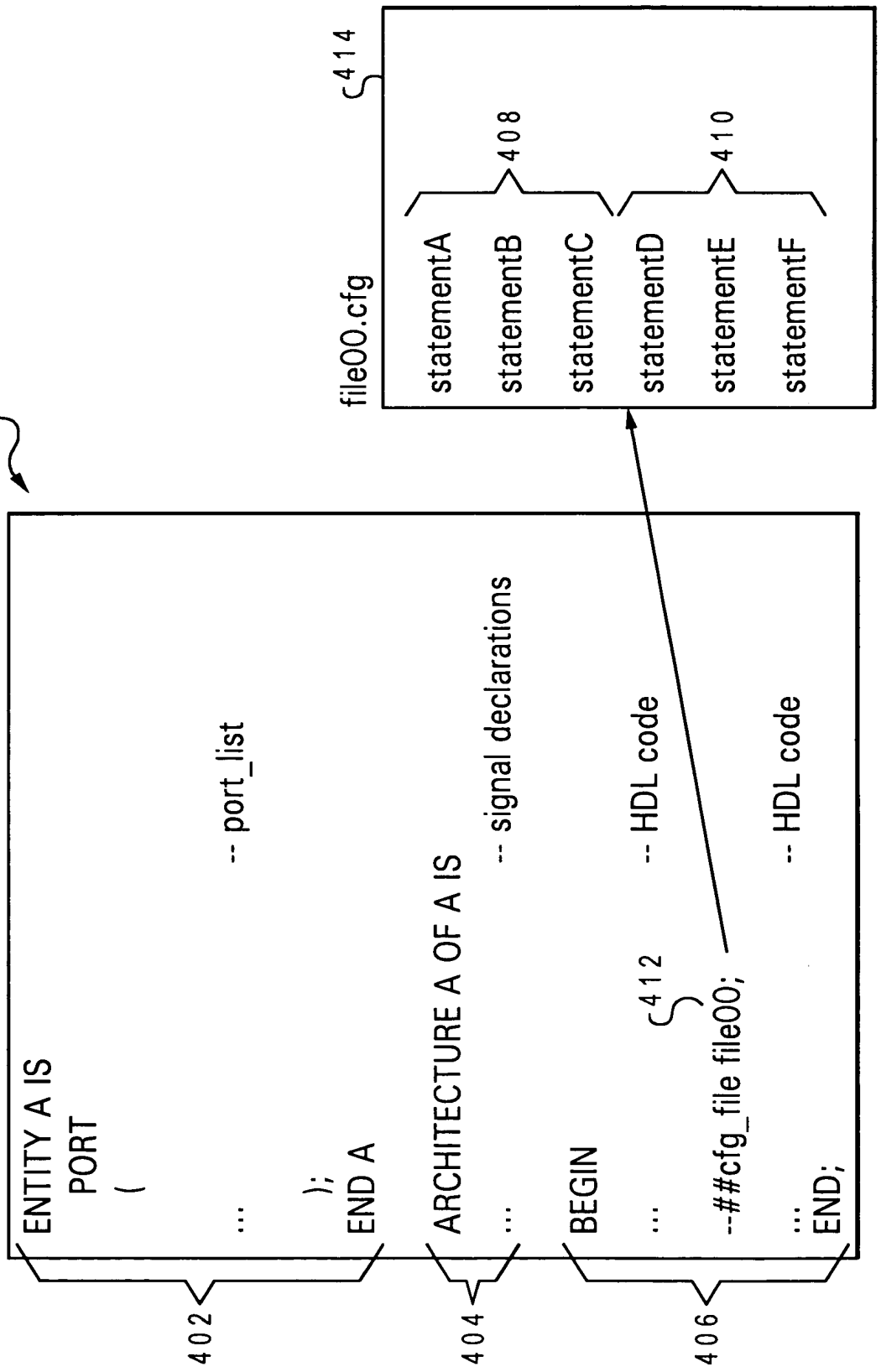
400'
ENTITY A IS
PORT
(
...
-- port_list
);
END A
ARCHITECTURE A OF A IS
...
-- signal declarations
BEGIN
...
-- HDL code
412
--##cfg_file file00;
...
-- HDL code
END;
402
404
406
file00.cfg
414
statementA
statementB
statementC
statementD
statementE
statementF
408
410

Fig. 4B

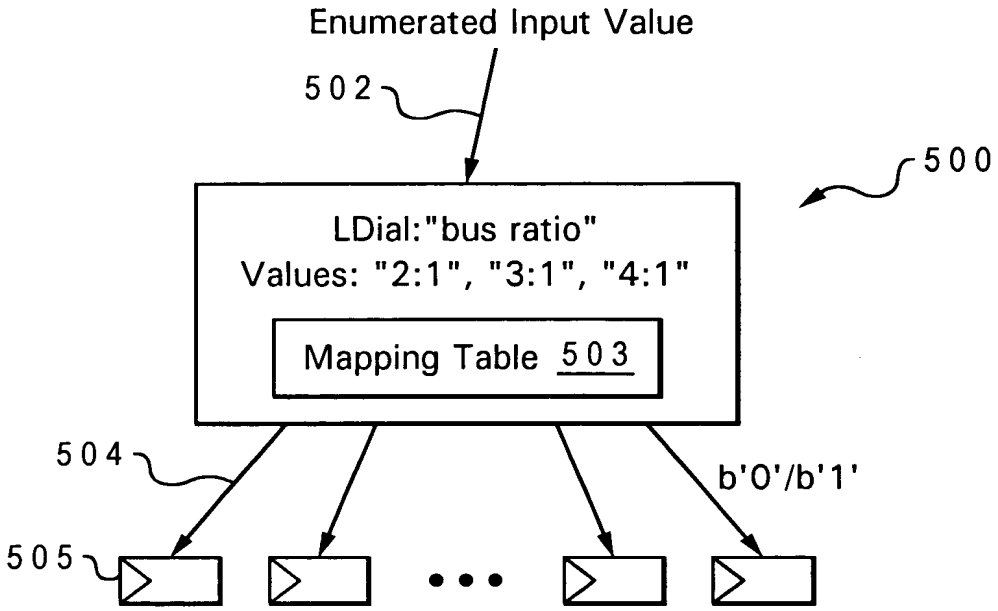
Enumerated Input Value
502
500
LDial:"bus ratio"
Values: "2:1", "3:1", "4:1"
Mapping Table 503
504
b'0'/b'1'
505

Fig. 5A

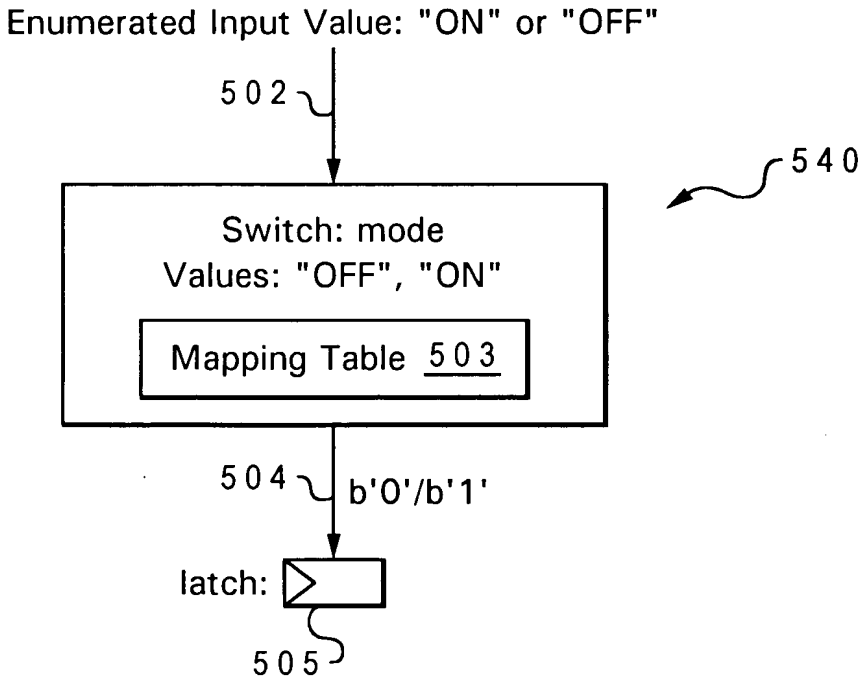
Enumerated Input Value: "ON" or "OFF"
502
540
Switch: mode
Values: "OFF", "ON"
Mapping Table 503
504
b'0'/b'1'
latch:
505

Fig. 5D

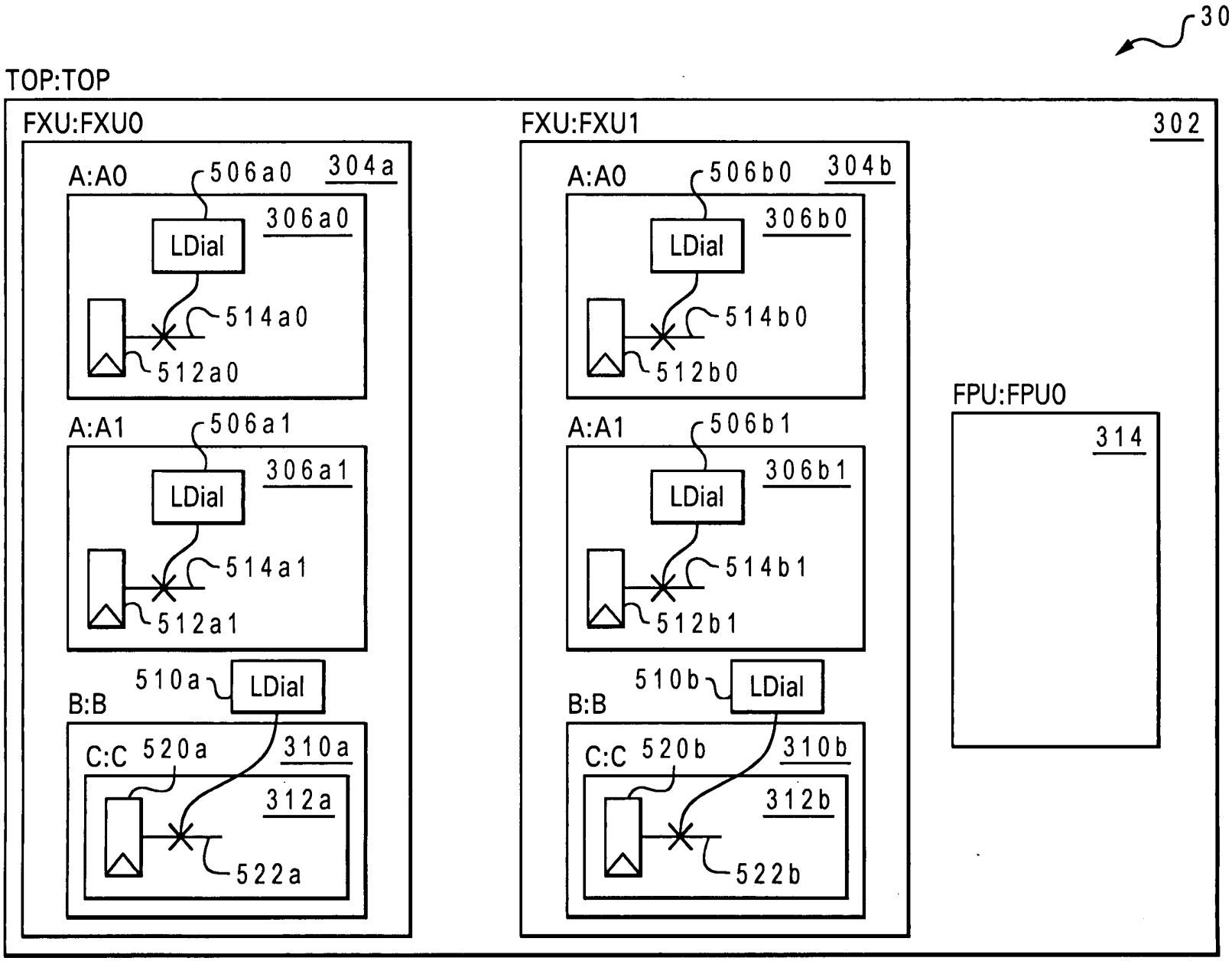
300'
TOP:TOP
FXU:FXU0
FXU:FXU1
302
A:A0
506a0
304a
306a0
LDial
514a0
512a0
A:A1
506a1
306a1
LDial
514a1
512a1
510a
LDial
B:B
C:C
520a
310a
312a
522a
A:A0
506b0
304b
306b0
LDial
514b0
512b0
A:A1
506b1
306b1
LDial
514b1
512b1
510b
LDial
B:B
C:C
520b
310b
312b
522b
FPU:FPU0
314

Fig. 5B

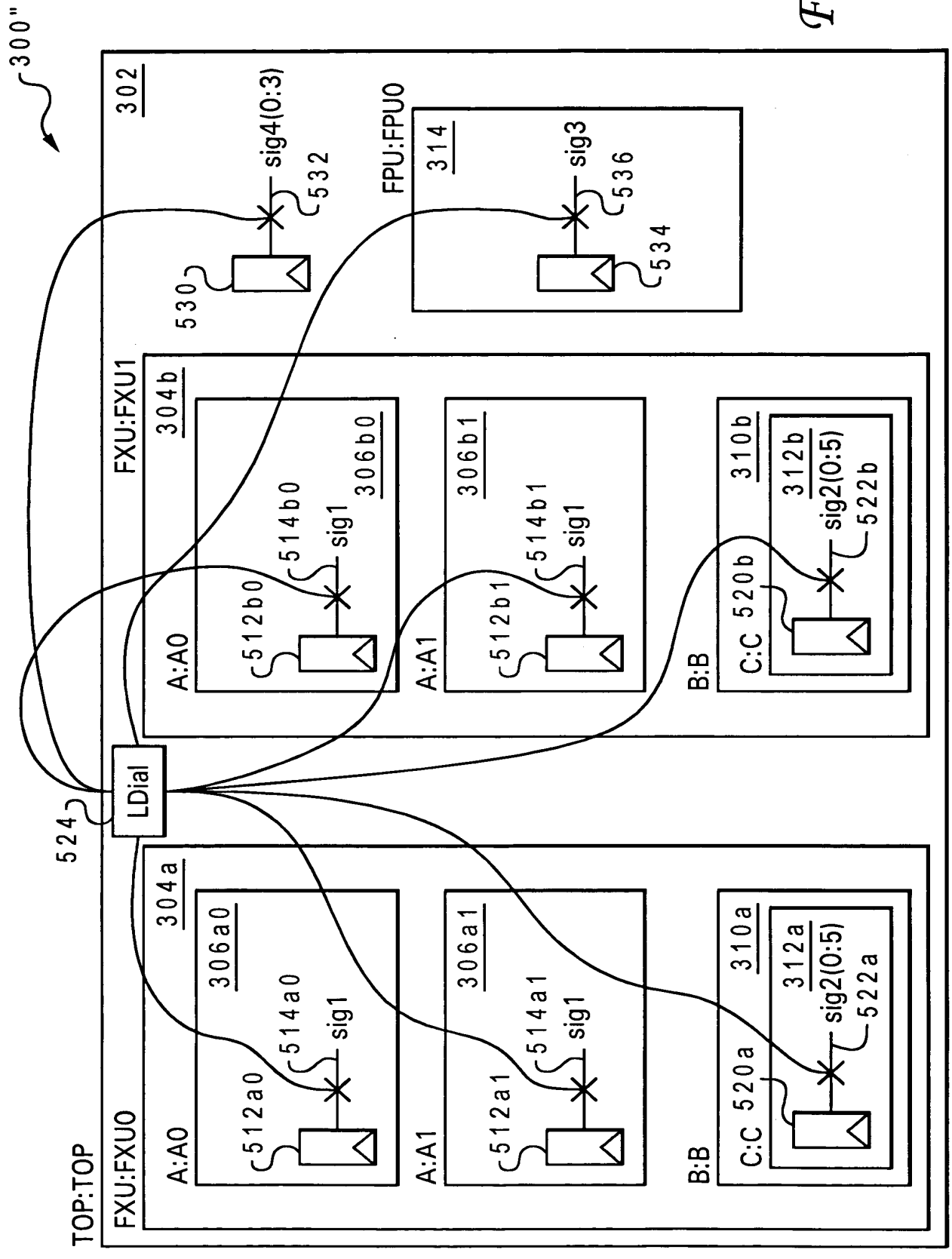
300"
302
TOP:TOP
FXU:FXU0
304a
A:A0
306a0
514a0
sig1
512a0
A:A1
306a1
514a1
sig1
512a1
B:B
310a
C:C 520a
312a
sig2(0:5)
522a
524
LDial
FXU:FXU1
304b
A:A0
306b0
514b0
sig1
512b0
A:A1
306b1
514b1
sig1
512b1
B:B
310b
C:C 520b
312b
sig2(0:5)
522b
530
sig4(0:3)
532
FPU:FPU0
314
sig3
536
534

Fig. 5C

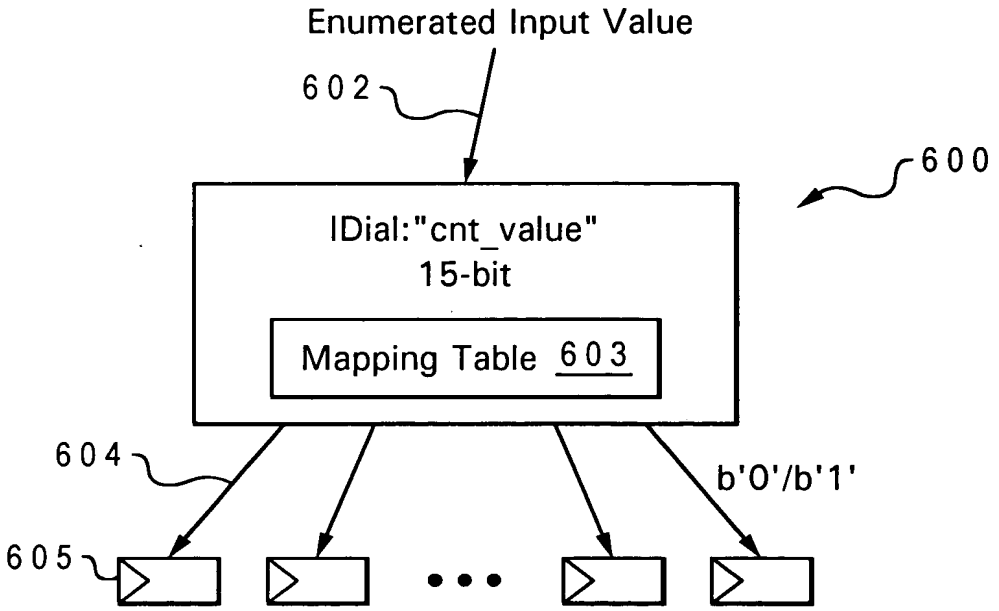
Enumerated Input Value
602
600
IDial:"cnt_value"
15-bit
Mapping Table 603
604
b'0'/b'1'
605

Fig. 6A

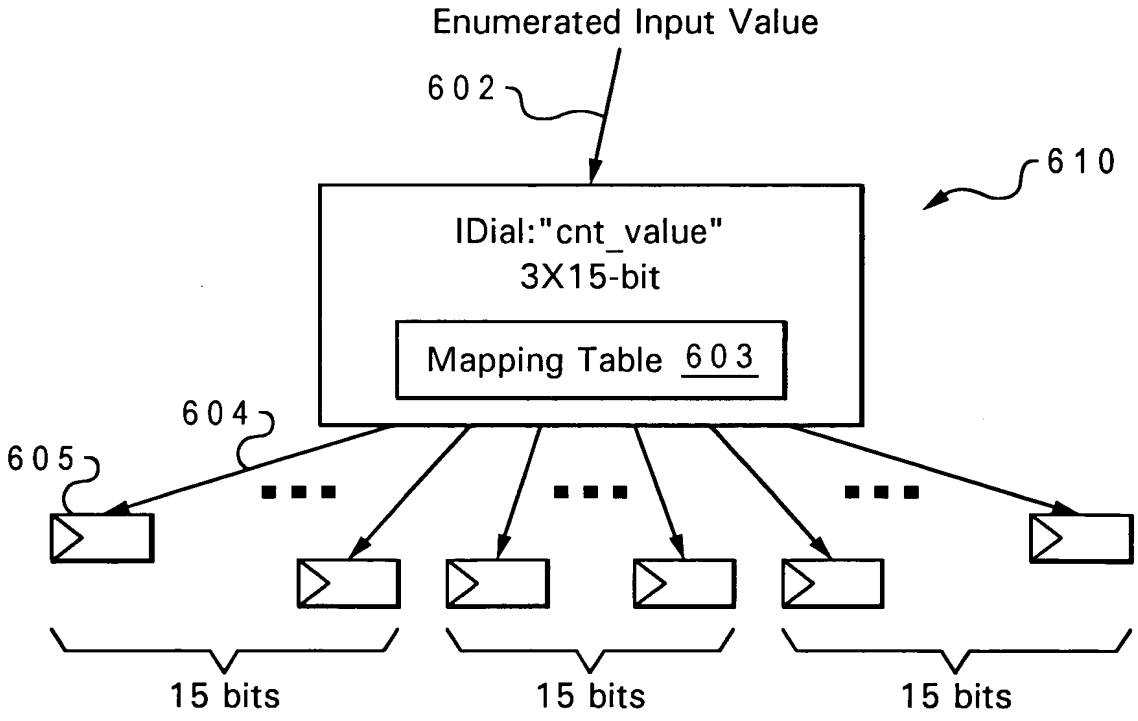
Enumerated Input Value
602
610
IDial:"cnt_value"
3X15-bit
Mapping Table 603
604
605
15 bits
15 bits
15 bits

Fig. 6B

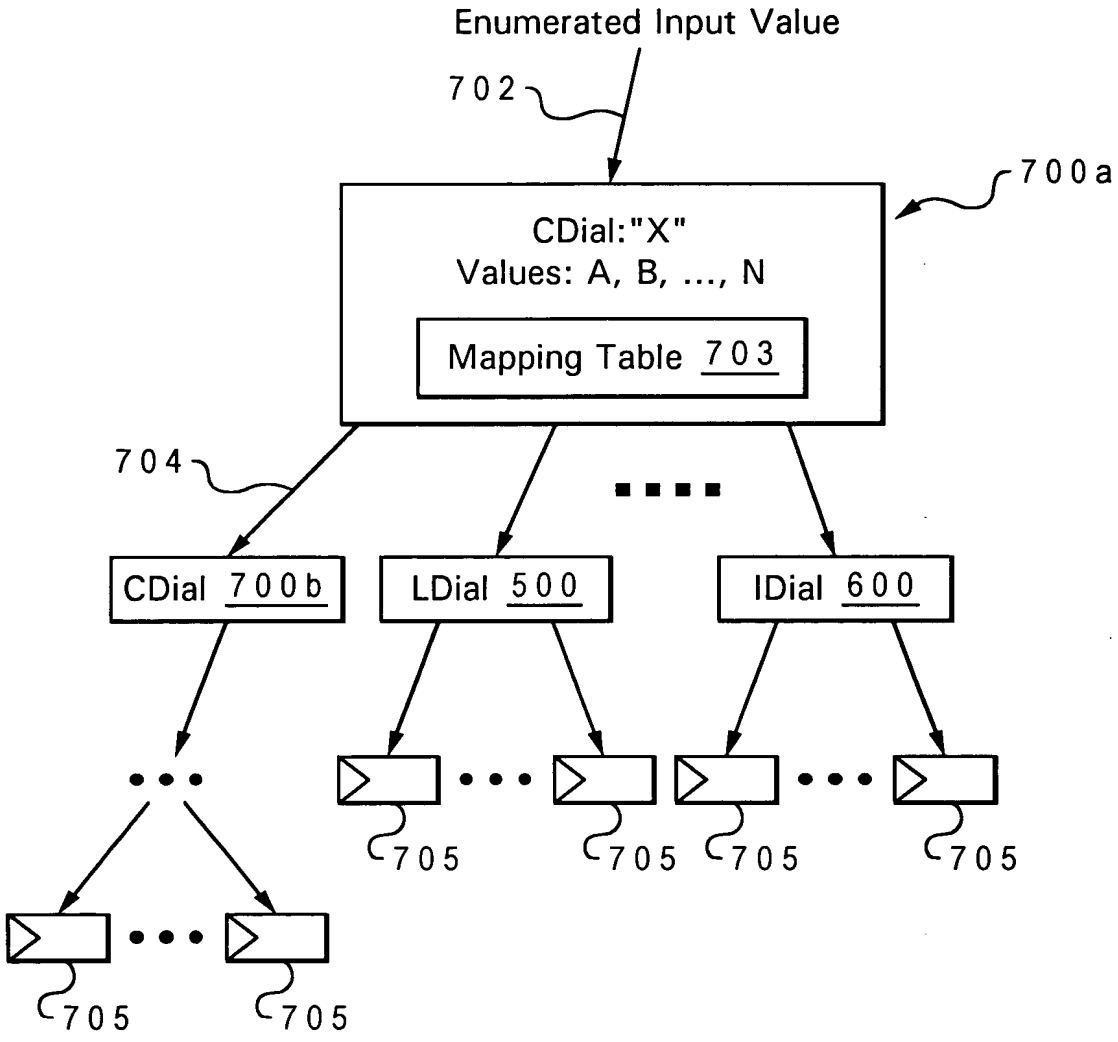
Enumerated Input Value
702
700a
CDial:"X"
Values: A, B, ..., N
Mapping Table 703
704
CDial 700b
LDial 500
IDial 600
705
705
705
705
705
705

Fig. 7A

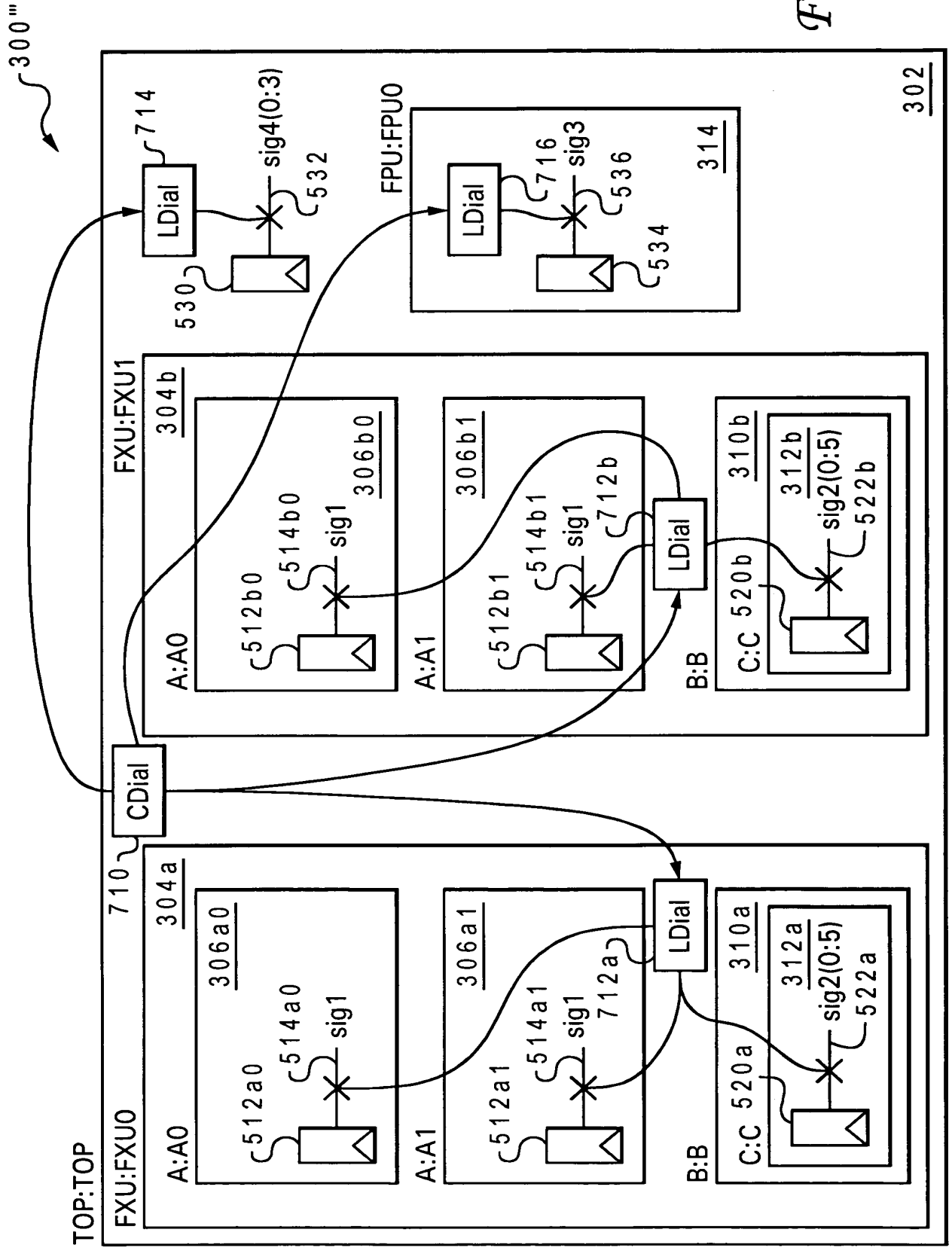
300"
TOP:TOP
FXU:FXU0
710
CDial
304a
306a0
A:A0
512a0
514a0
sig1
306a1
A:A1
512a1
514a1
sig1
712a
LDial
310a
B:B
C:C
520a
312a
sig2(0:5)
522a
302
FXU:FXU1
304b
306b0
A:A0
512b0
514b0
sig1
306b1
A:A1
512b1
514b1
sig1
712b
LDial
310b
B:B
C:C
520b
312b
sig2(0:5)
522b
FPU:FPU0
314
LDial
716
sig3
536
534
LDial
714
sig4(0:3)
532
530

Fig. 7B

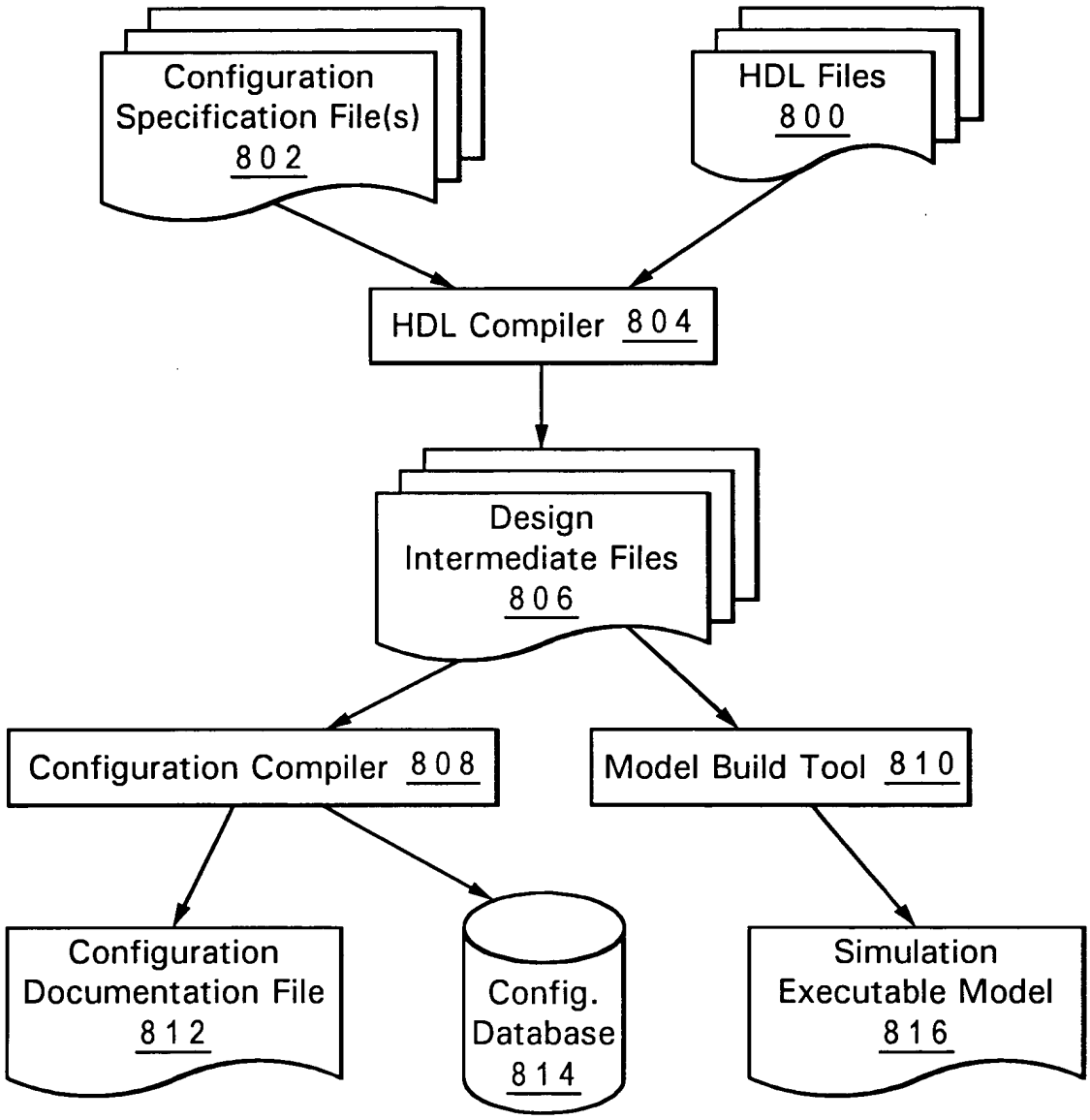
Configuration Specification File(s) 802
HDL Files 800
HDL Compiler 804
Design Intermediate Files 806
Configuration Compiler 808
Model Build Tool 810
Configuration Documentation File 812
Config. Database 814
Simulation Executable Model 816

Fig. 8

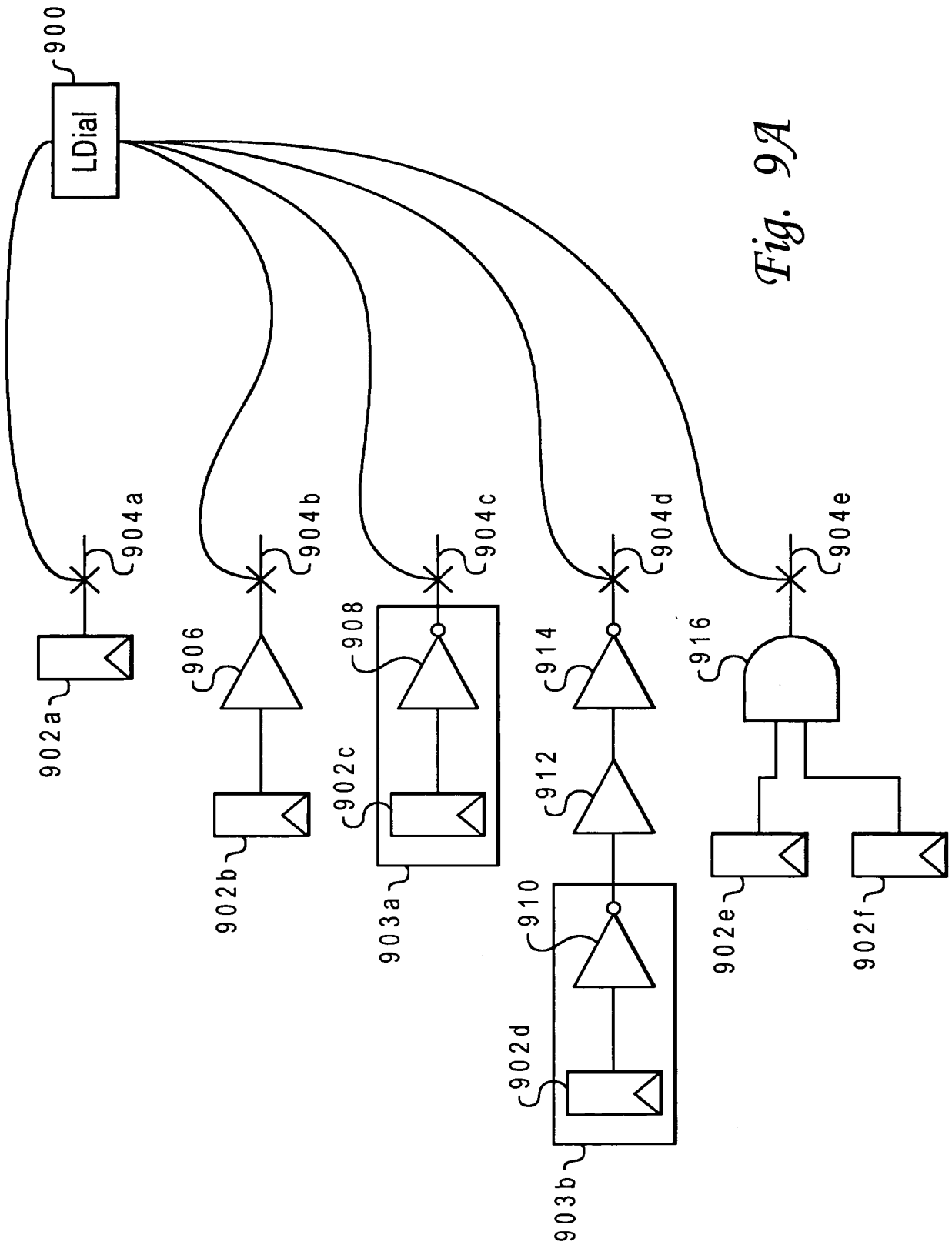
900
LDial
904a
904b
904c
904d
904e
902a
906
908
914
916
902b
902c
912
902e
902f
903a
910
902d
903b

Fig. 9A

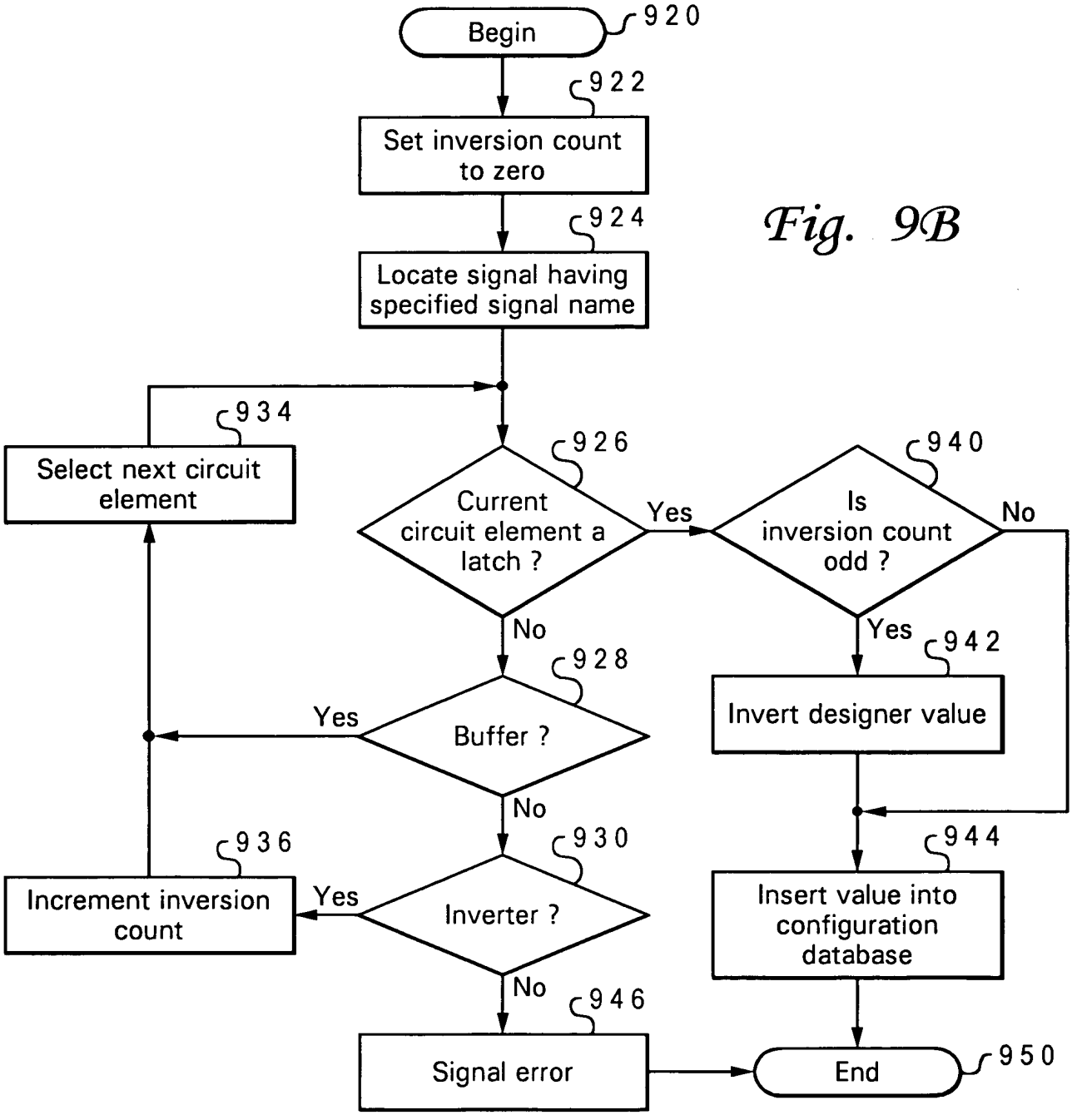
Begin
920
922
Set inversion count to zero
924
Locate signal having specified signal name
934
Select next circuit element
926
Current circuit element a latch ?
Yes
940
Is inversion count odd ?
No
No
Yes
942
Invert designer value
928
Yes
Buffer ?
No
936
Increment inversion count
Yes
930
Inverter ?
944
Insert value into configuration database
No
946
Signal error
End
950

Fig. 9B

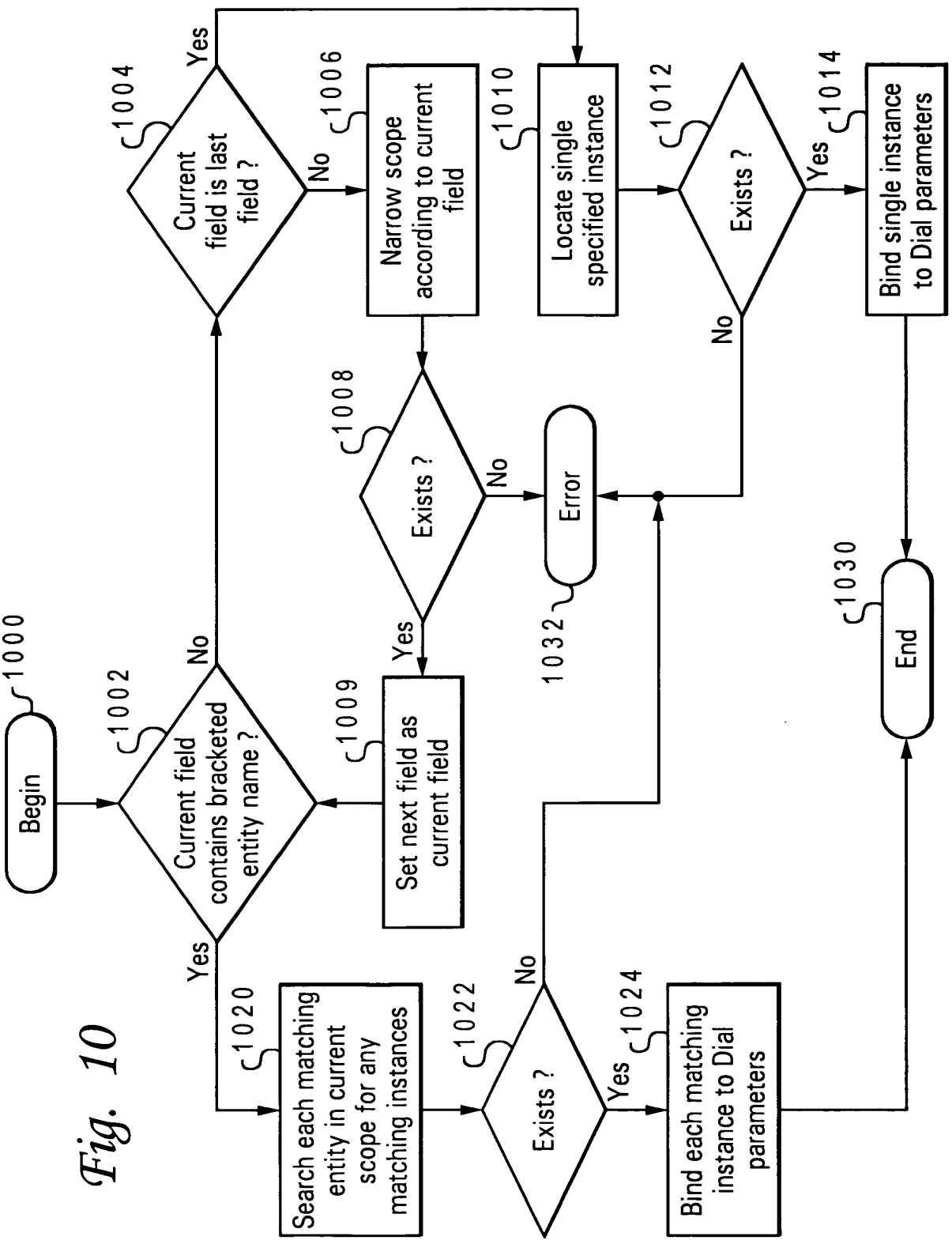
Begin
1000
Current field contains bracketed entity name ?
1002
No
Yes
Set next field as current field
1009
Exists ?
1008
No
Yes
Error
1032
Current field is last field ?
1004
Yes
No
Narrow scope according to current field
1006
Locate single specified instance
1010
Exists ?
1012
No
Yes
Bind single instance to Dial parameters
1014
End
1030
Search each matching entity in current scope for any matching instances
1020
Exists ?
1022
No
Yes
Bind each matching instance to Dial parameters
1024

Fig. 10

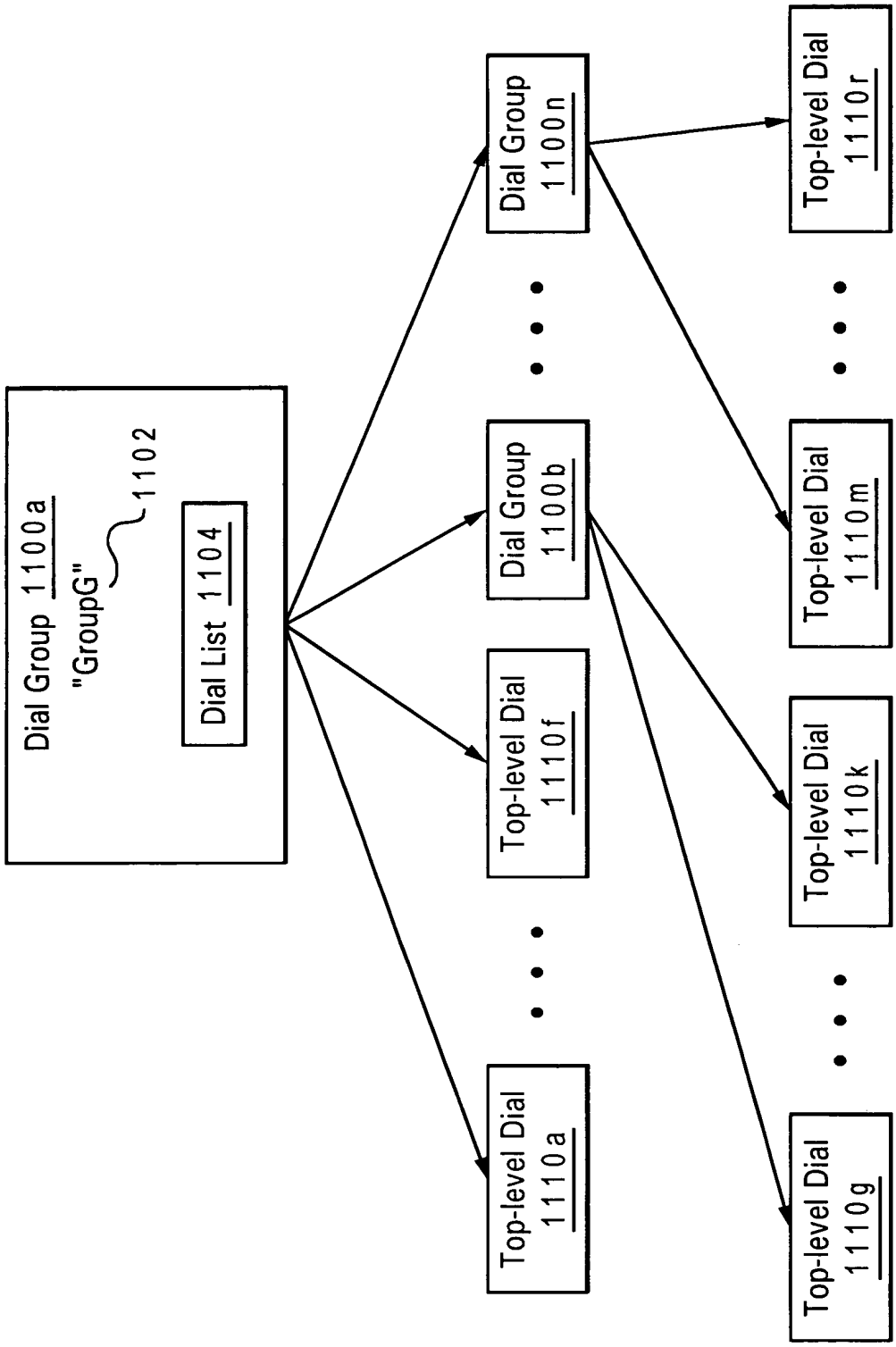
Dial Group 1100a
"GroupG"
1102
Dial List 1104
Dial Group 1100n
Dial Group 1100b
Top-level Dial 1110f
Top-level Dial 1110a
Top-level Dial 1110r
Top-level Dial 1110m
Top-level Dial 1110k
Top-level Dial 1110g

Fig. 11A

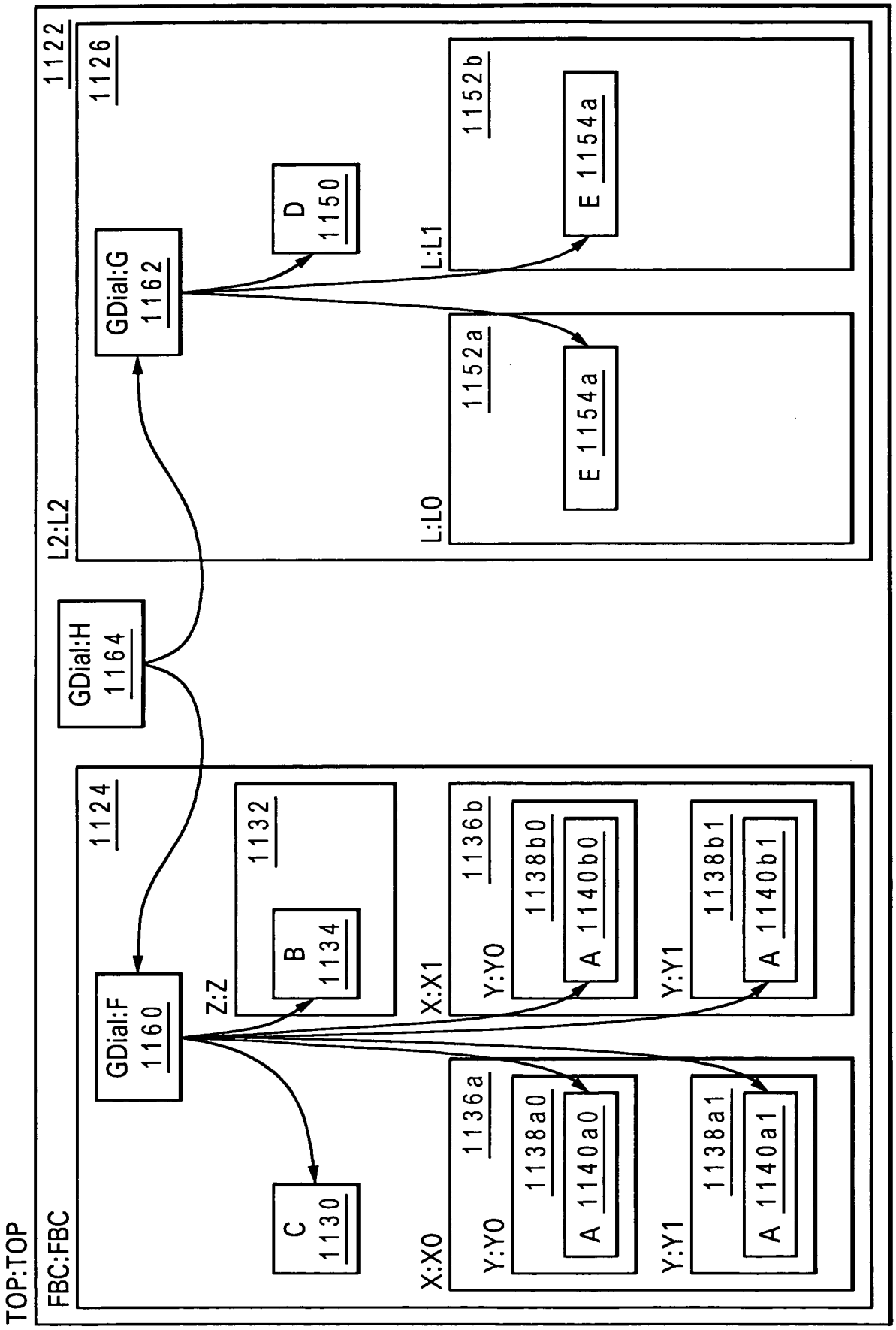
TOP:TOP
FBC:FBC
1124
GDial:F
1160
C
1130
Z:Z
1132
B
1134
X:X0
1136a
Y:Y0
1138a0
A
1140a0
Y:Y1
1138a1
A
1140a1
X:X1
1136b
Y:Y0
1138b0
A
1140b0
Y:Y1
1138b1
A
1140b1
GDial:H
1164
L2:L2
1122
1126
GDial:G
1162
D
1150
L:L1
1152b
E
1154a
L:L0
1152a
E
1154a
1120

Fig. 11B

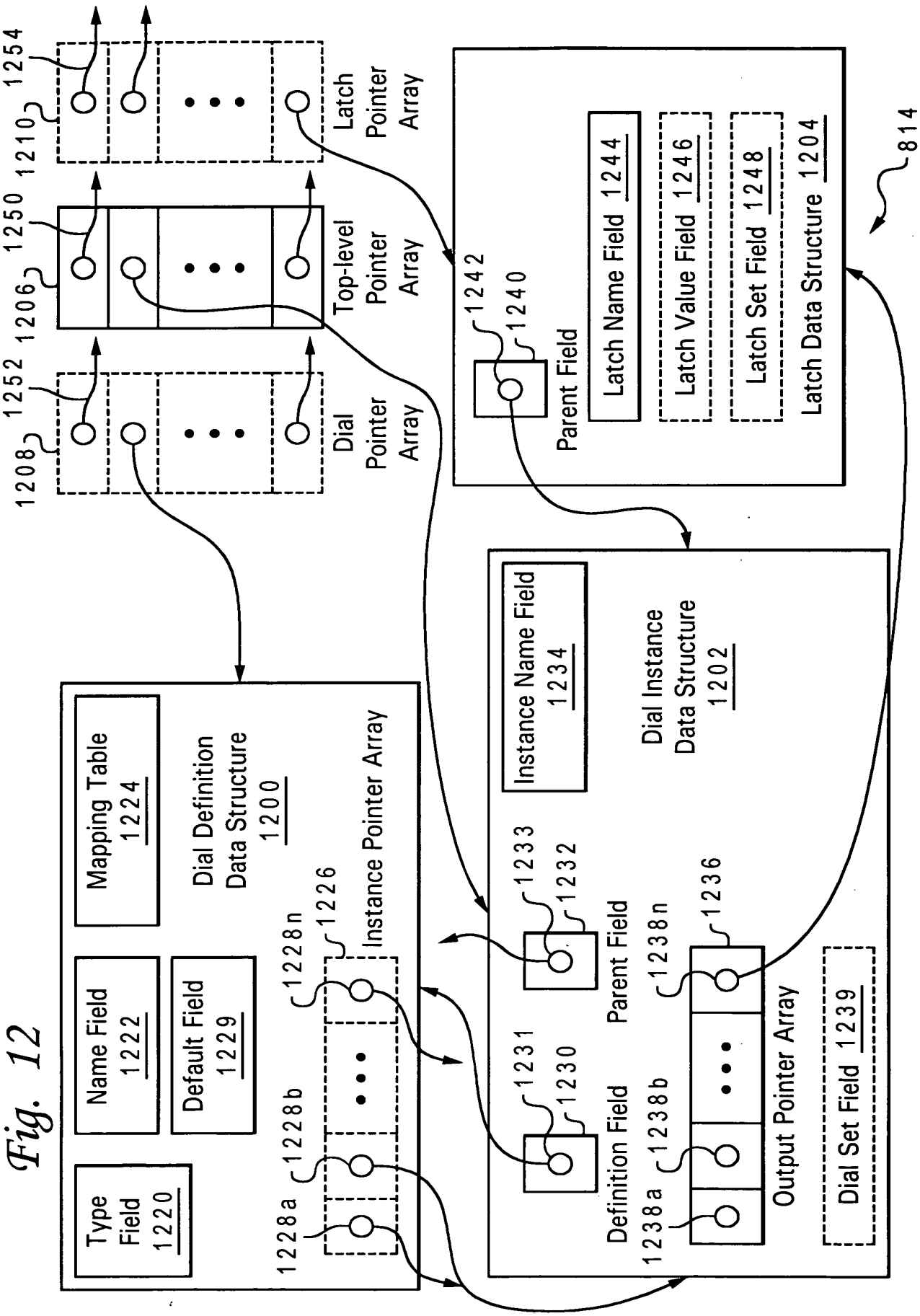
Fig. 12
Type Field 1220
Name Field 1222
Default Field 1229
Mapping Table 1224
Dial Definition Data Structure 1200
Instance Pointer Array
1226
1228a
1228b
1228n
1208
1252
Dial Pointer Array
1206
1250
Top-level Pointer Array
1210
1254
Latch Pointer Array
1242
1240
Parent Field
Latch Name Field 1244
Latch Value Field 1246
Latch Set Field 1248
Latch Data Structure 1204
814
Instance Name Field 1234
Dial Instance Data Structure 1202
1231
1230
Definition Field
1233
1232
Parent Field
1238a
1238b
1238n
1236
Output Pointer Array
Dial Set Field 1239

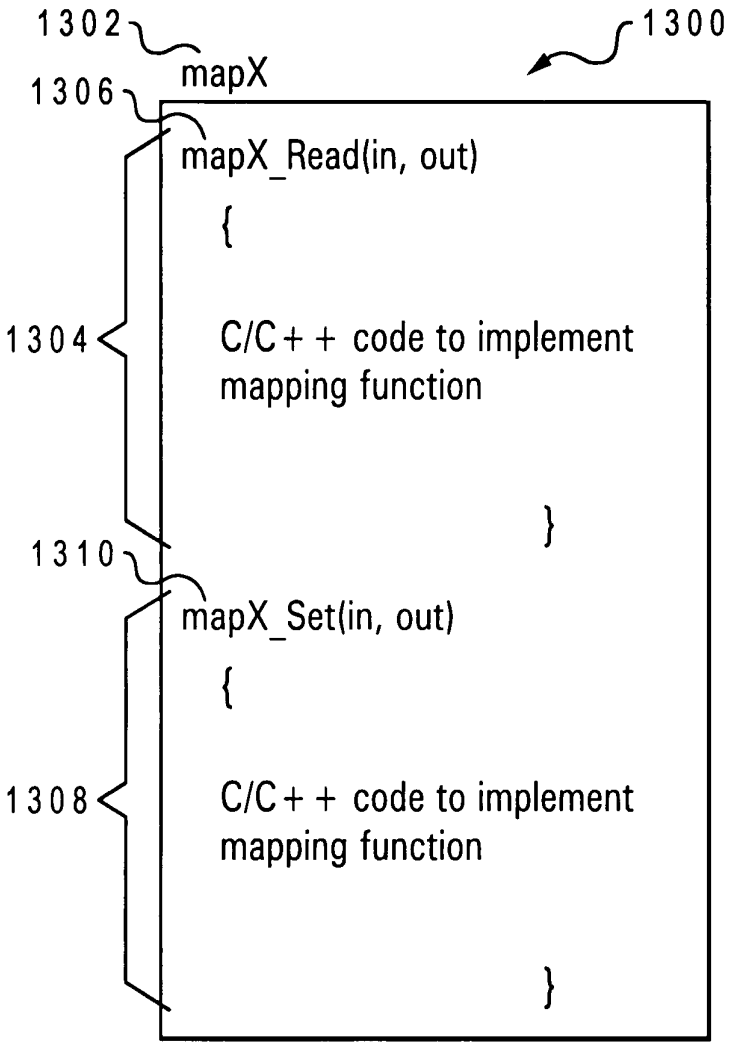

Fig. 13A

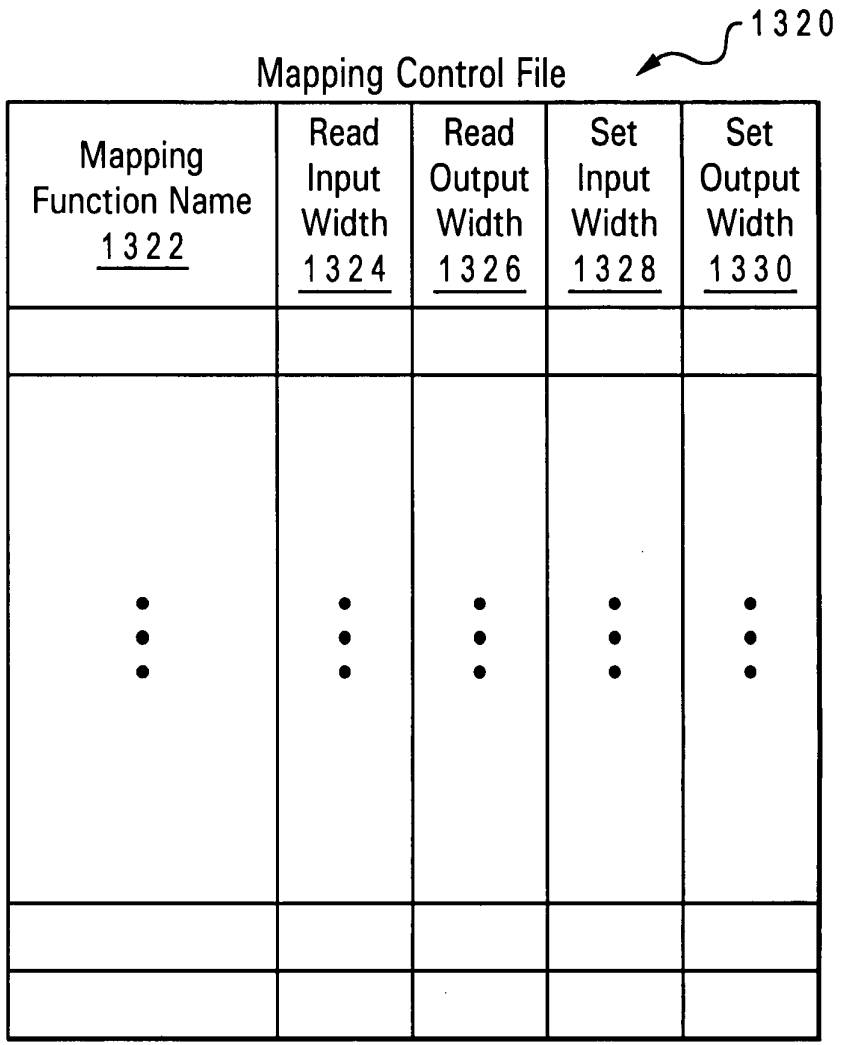

Fig. 13B

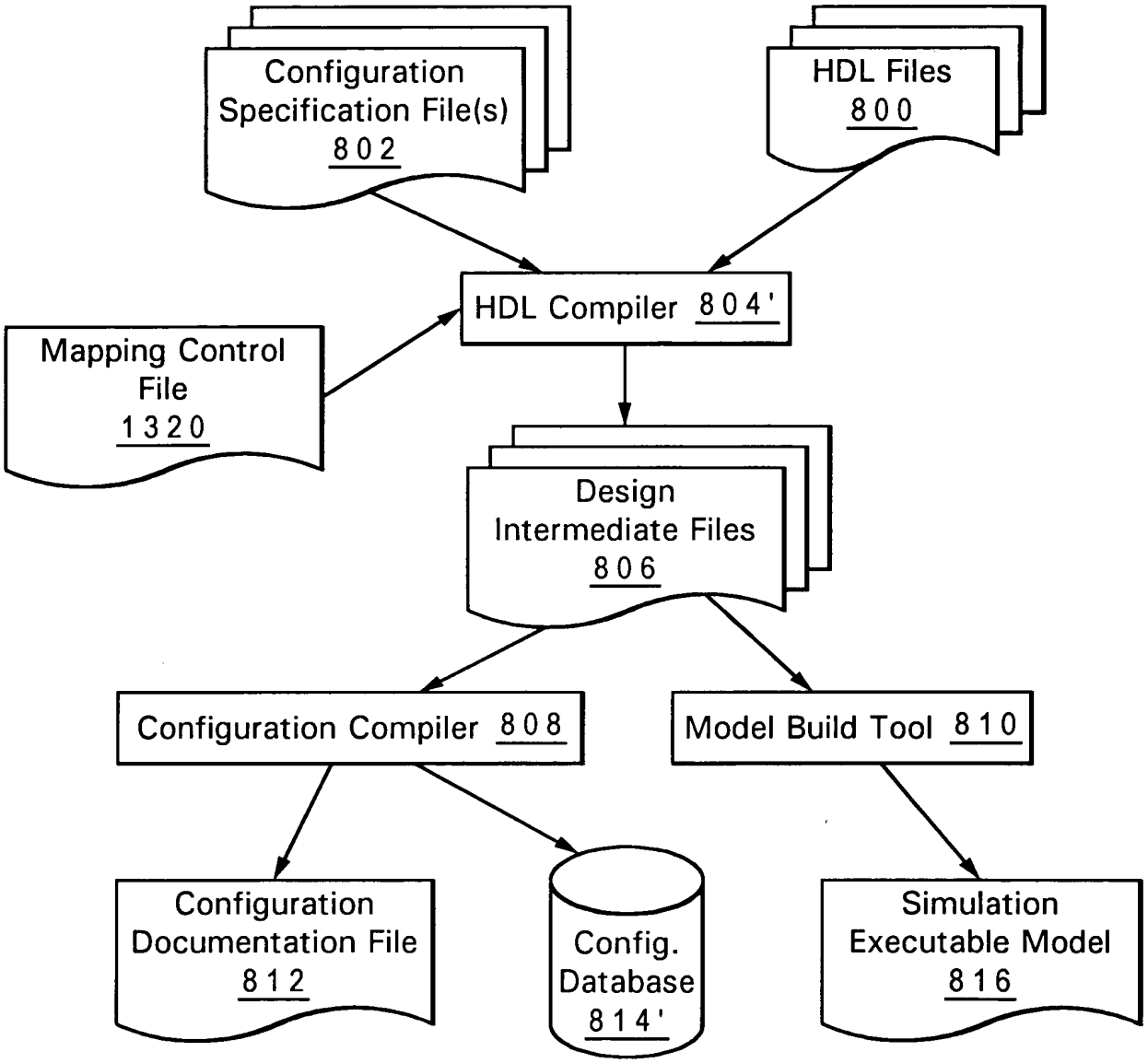
Configuration Specification File(s) 802
HDL Files 800
HDL Compiler 804'
Mapping Control File 1320
Design Intermediate Files 806
Configuration Compiler 808
Model Build Tool 810
Configuration Documentation File 812
Config. Database 814'
Simulation Executable Model 816

Fig. 14

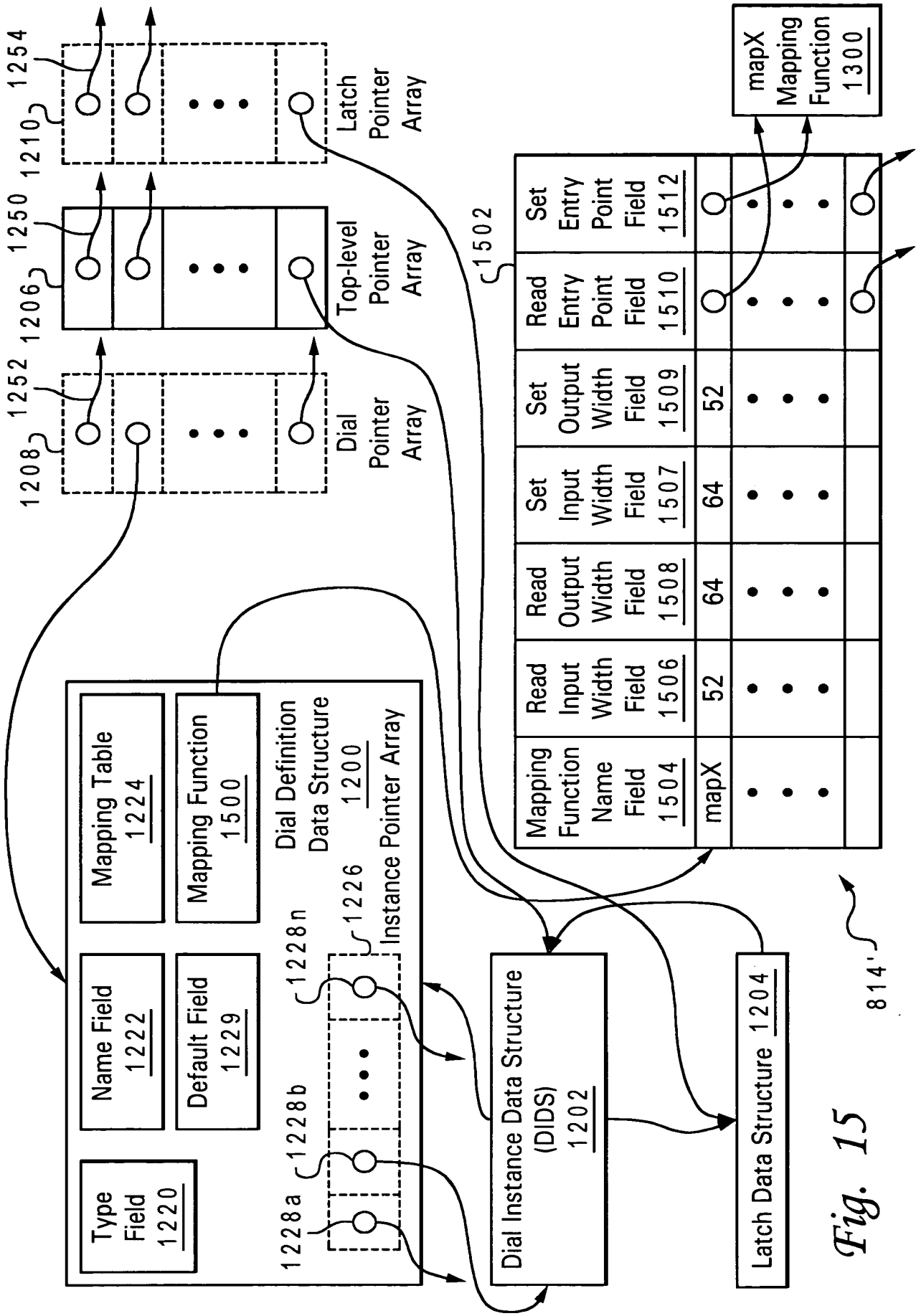
Dial Definition Data Structure 1200
Type Field 1220
Name Field 1222
Default Field 1229
Mapping Table 1224
Mapping Function 1500
1226 Instance Pointer Array
1228a
1228b
1228n
Dial Instance Data Structure (DIDS) 1202
Latch Data Structure 1204
814'
1208
1252
1206
1250
1210
1254
Dial Pointer Array
Top-level Pointer Array
Latch Pointer Array
1502
Mapping Function Name Field 1504
Read Input Width Field 1506
Read Output Width Field 1508
Set Input Width Field 1507
Set Output Width Field 1509
Read Entry Point Field 1510
Set Entry Point Field 1512
mapX
52
64
64
52
mapX Mapping Function 1300

Fig. 15

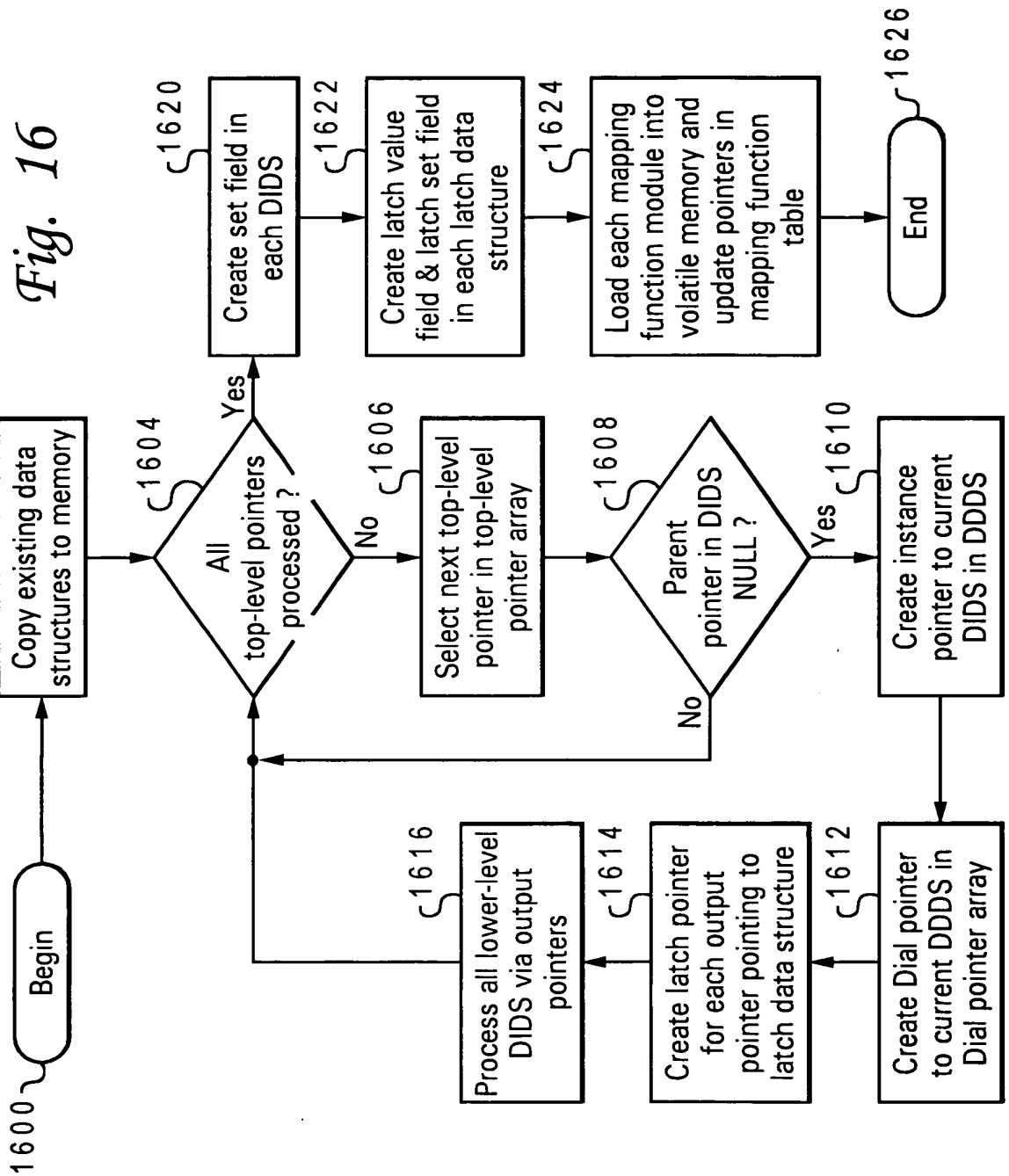
1600
Begin
1602
Copy existing data structures to memory
1604
All top-level pointers processed ?
Yes
No
1606
Select next top-level pointer in top-level pointer array
1608
Parent pointer in DIDS NULL ?
Yes
No
1610
Create instance pointer to current DIDS in DDDS
1612
Create Dial pointer to current DDDS in Dial pointer array
1614
Create latch pointer for each output pointer pointing to latch data structure
1616
Process all lower-level DIDS via output pointers
1620
Create set field in each DIDS
1622
Create latch value field & latch set field in each latch data structure
1624
Load each mapping function module into volatile memory and update pointers in mapping function table
1626
End

Fig. 16

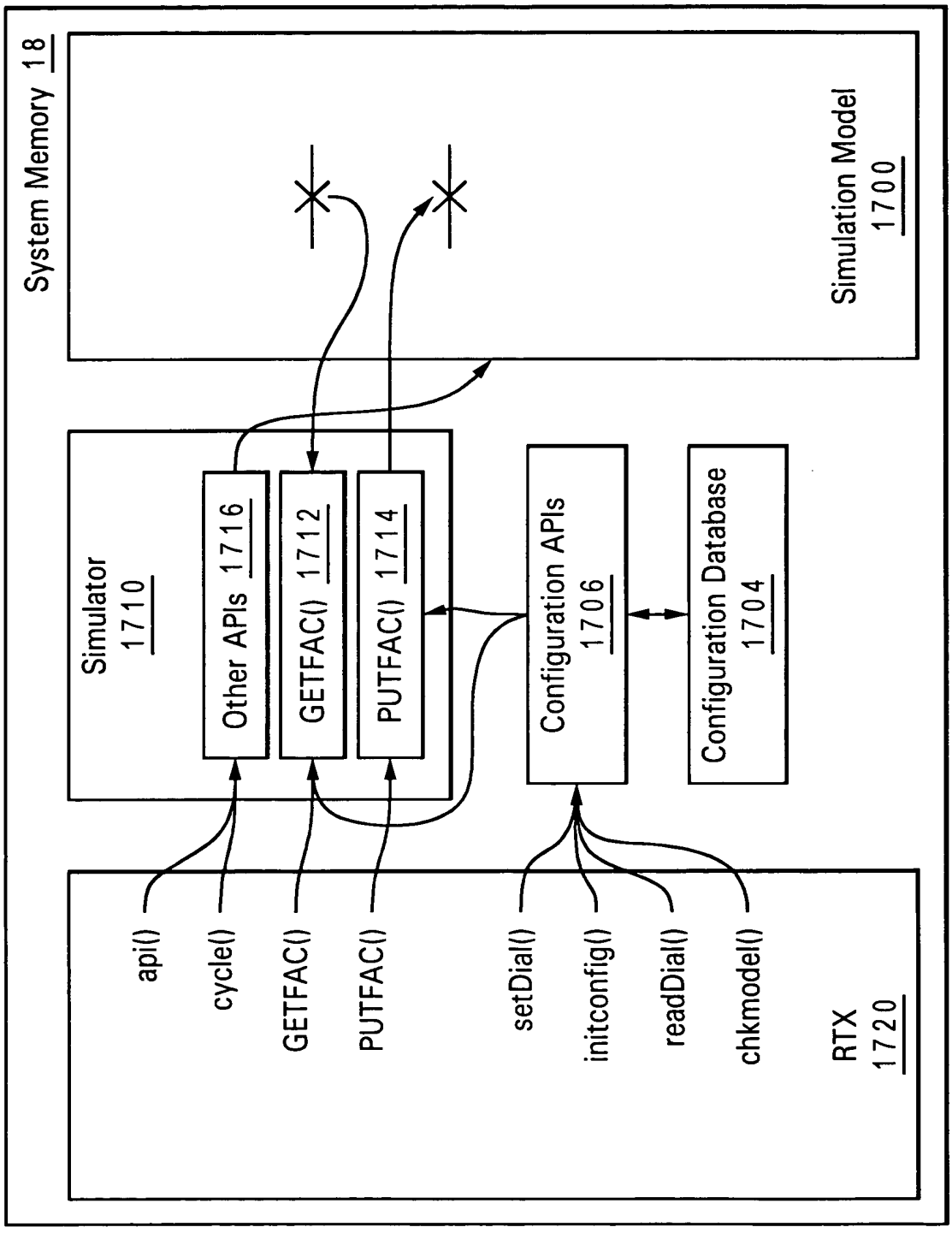
System Memory 18
Simulation Model 1700
Simulator 1710
Other APIs 1716
GETFAC() 1712
PUTFAC() 1714
Configuration APIs 1706
Configuration Database 1704
api()
cycle()
GETFAC()
PUTFAC()
setDial()
initconfig()
readDial()
chkmodel()
RTX 1720

Fig. 17

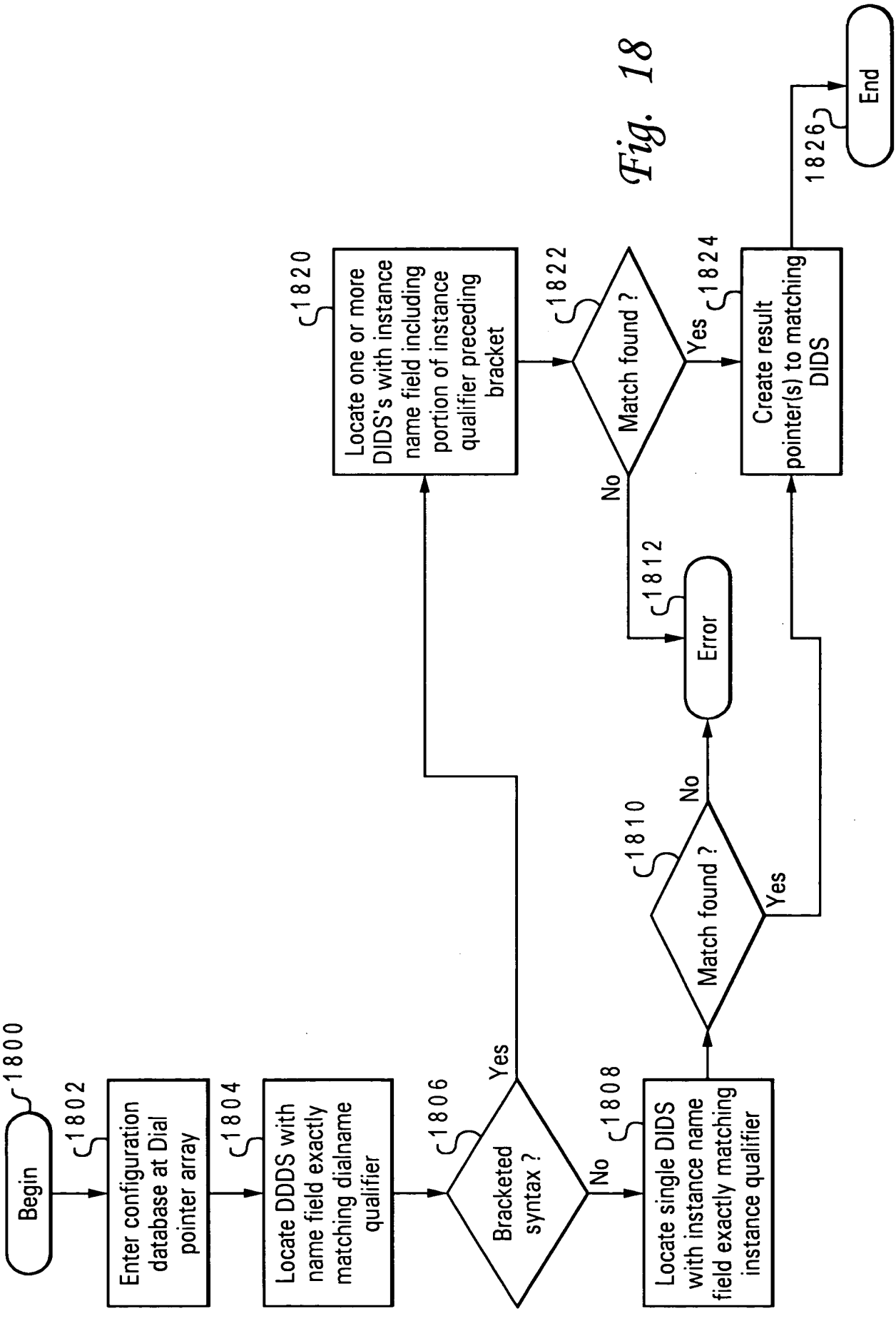
Begin
1800
Enter configuration database at Dial pointer array
1802
Locate DDDS with name field exactly matching dialname qualifier
1804
Bracketed syntax ?
1806
Yes
No
Locate single DIDS with instance name field exactly matching instance qualifier
1808
Match found ?
1810
No
Yes
Error
1812
Locate one or more DIDS's with instance name field including portion of instance qualifier preceding bracket
1820
Match found ?
1822
No
Yes
Create result pointer(s) to matching DIDS
1824
End
1826

Fig. 18

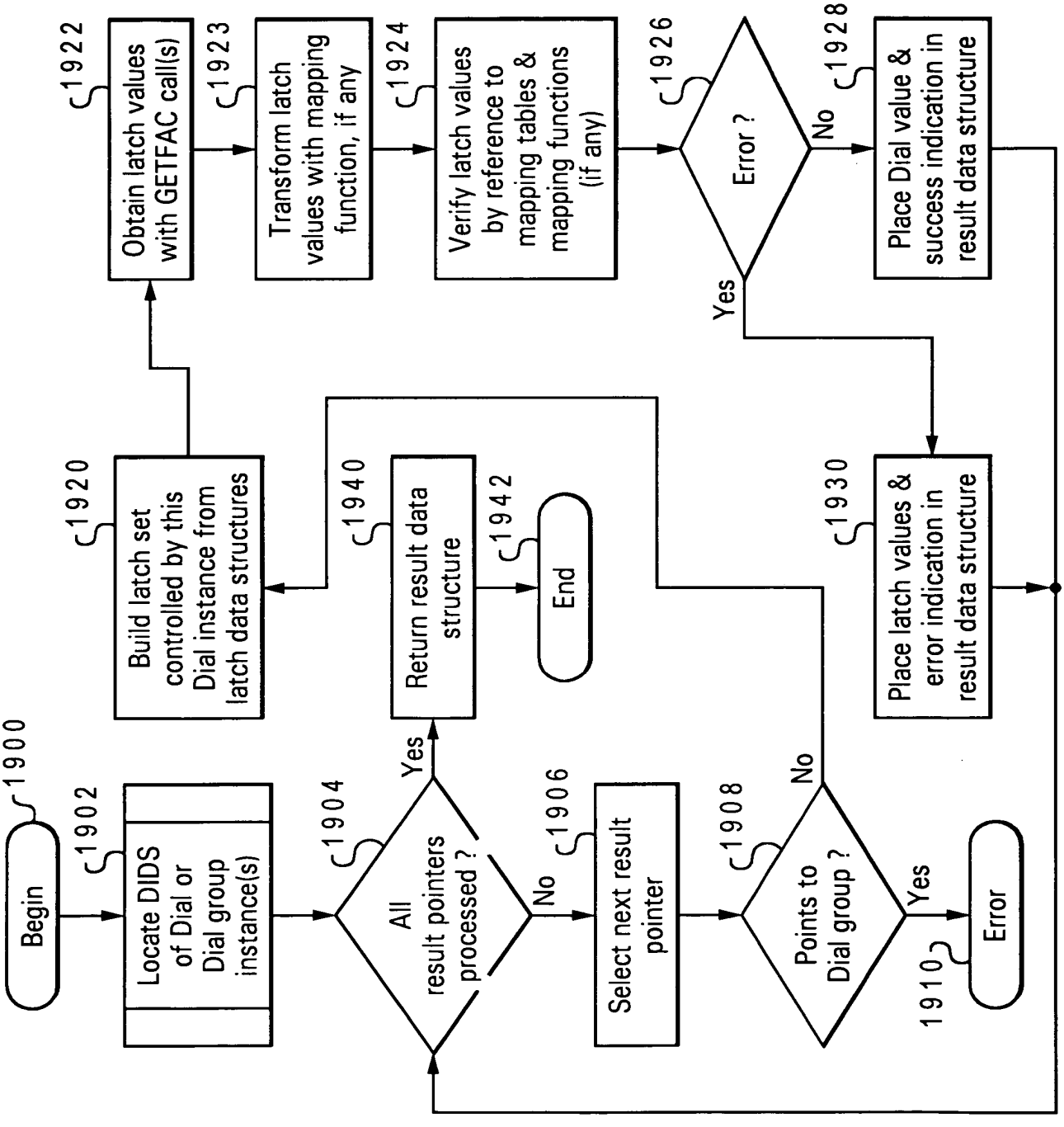
1900
Begin
1902
Locate DIDS of Dial or Dial group instance(s)
1904
All result pointers processed ?
Yes
No
1906
Select next result pointer
1908
Points to Dial group ?
No
Yes
1910
Error
1920
Build latch set controlled by this Dial instance from latch data structures
1922
Obtain latch values with GETFAC call(s)
1923
Transform latch values with mapping function, if any
1924
Verify latch values by reference to mapping tables & mapping functions (if any)
1926
Error ?
No
Yes
1928
Place Dial value & success indication in result data structure
1930
Place latch values & error indication in result data structure
1940
Return result data structure
1942
End

Fig. 19A

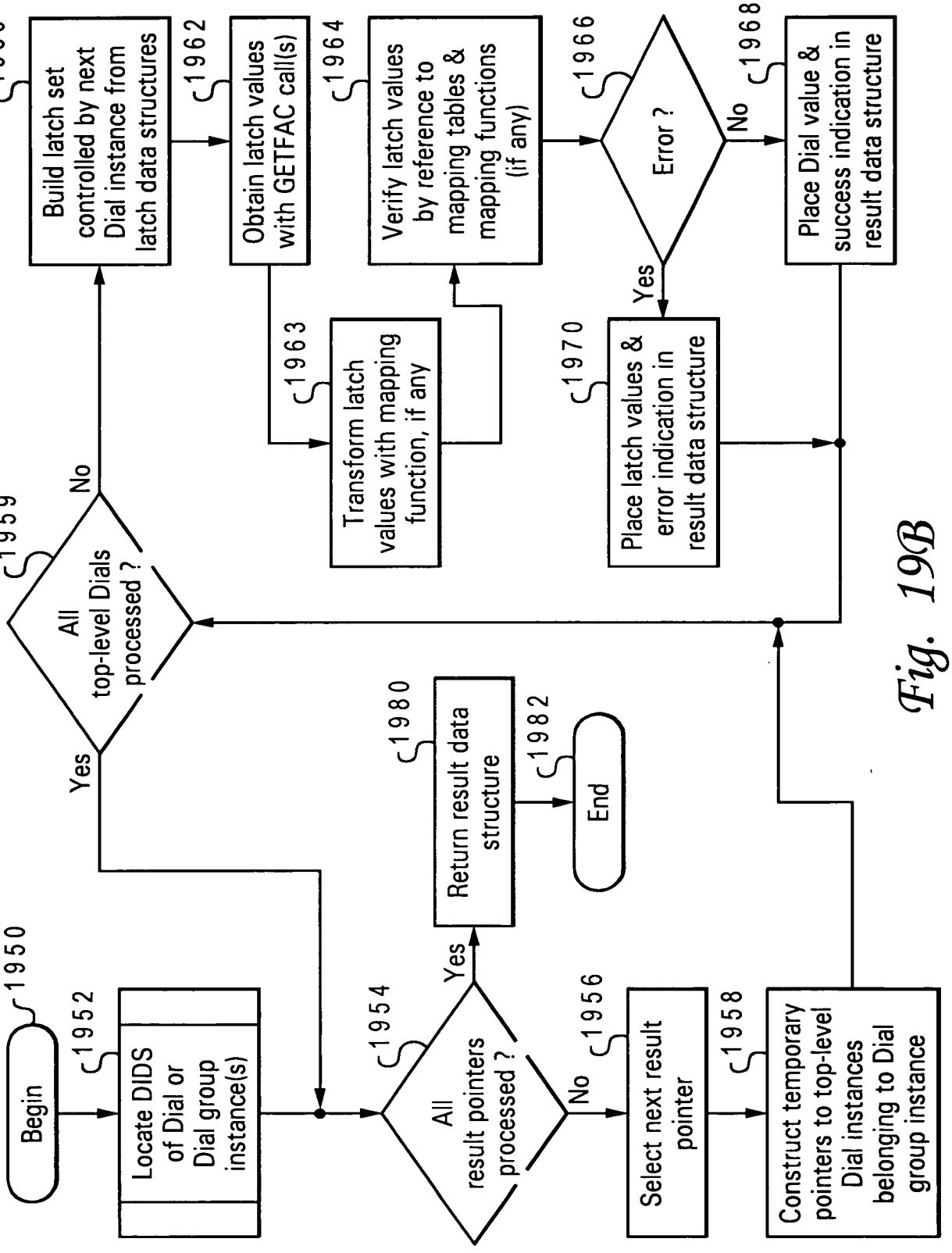
1950
Begin
1952
Locate DIDS of Dial or Dial group instance(s)
1954
All result pointers processed ?
Yes
No
1956
Select next result pointer
1958
Construct temporary pointers to top-level Dial instances belonging to Dial group instance
1959
All top-level Dials processed ?
Yes
No
1960
Build latch set controlled by next Dial instance from latch data structures
1962
Obtain latch values with GETFAC call(s)
1963
Transform latch values with mapping function, if any
1964
Verify latch values by reference to mapping tables & mapping functions (if any)
1966
Error ?
Yes
No
1968
Place Dial value & success indication in result data structure
1970
Place latch values & error indication in result data structure
1980
Return result data structure
1982
End

Fig. 19B

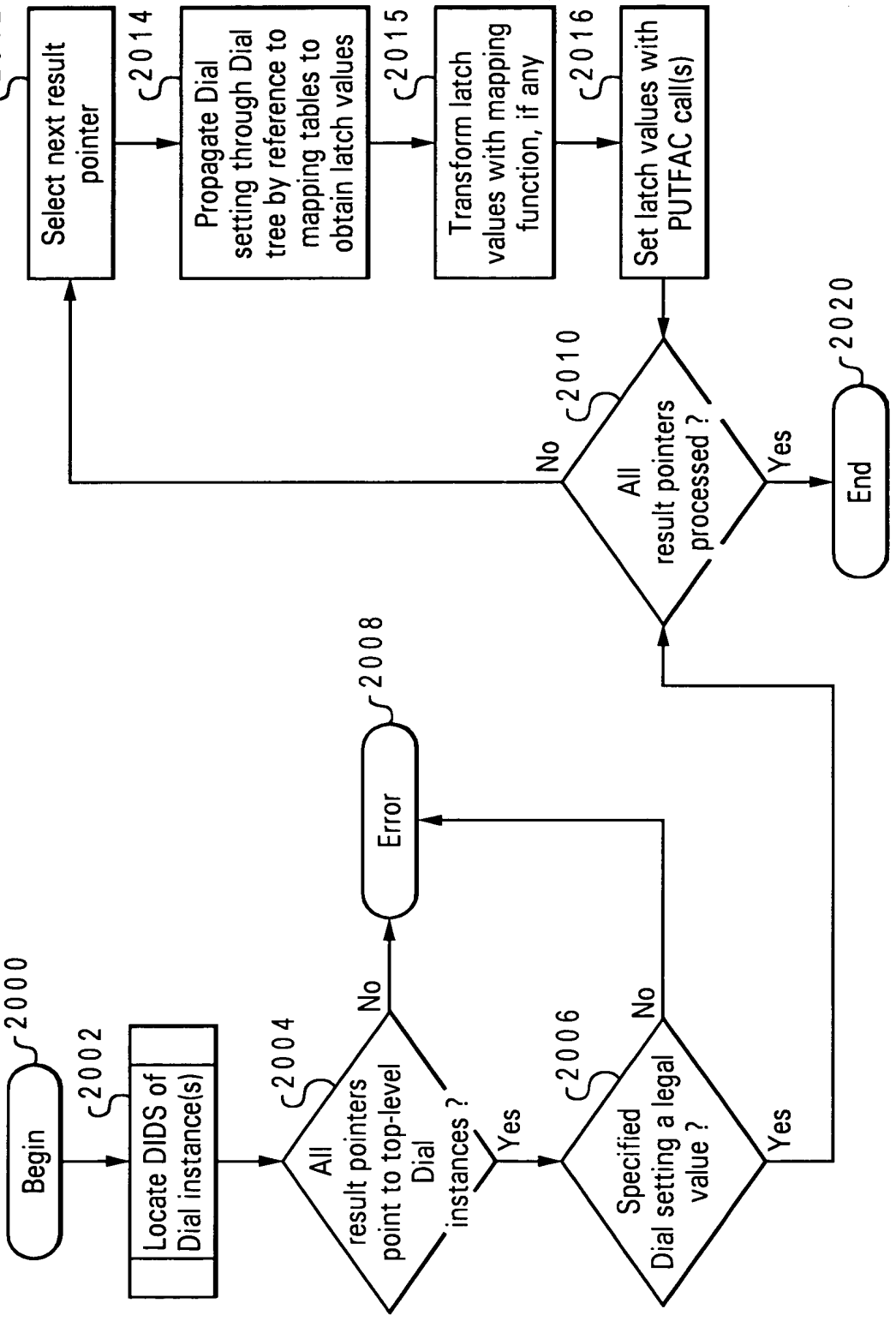
2000
Begin
2002
Locate DIDS of Dial instance(s)
2004
All result pointers point to top-level Dial instances ?
No
Yes
2008
Error
2006
Specified Dial setting a legal value ?
No
Yes
2010
All result pointers processed ?
No
Yes
2020
End
2012
Select next result pointer
2014
Propagate Dial setting through Dial tree by reference to mapping tables to obtain latch values
2015
Transform latch values with mapping function, if any
2016
Set latch values with PUTFAC call(s)

Fig. 20A

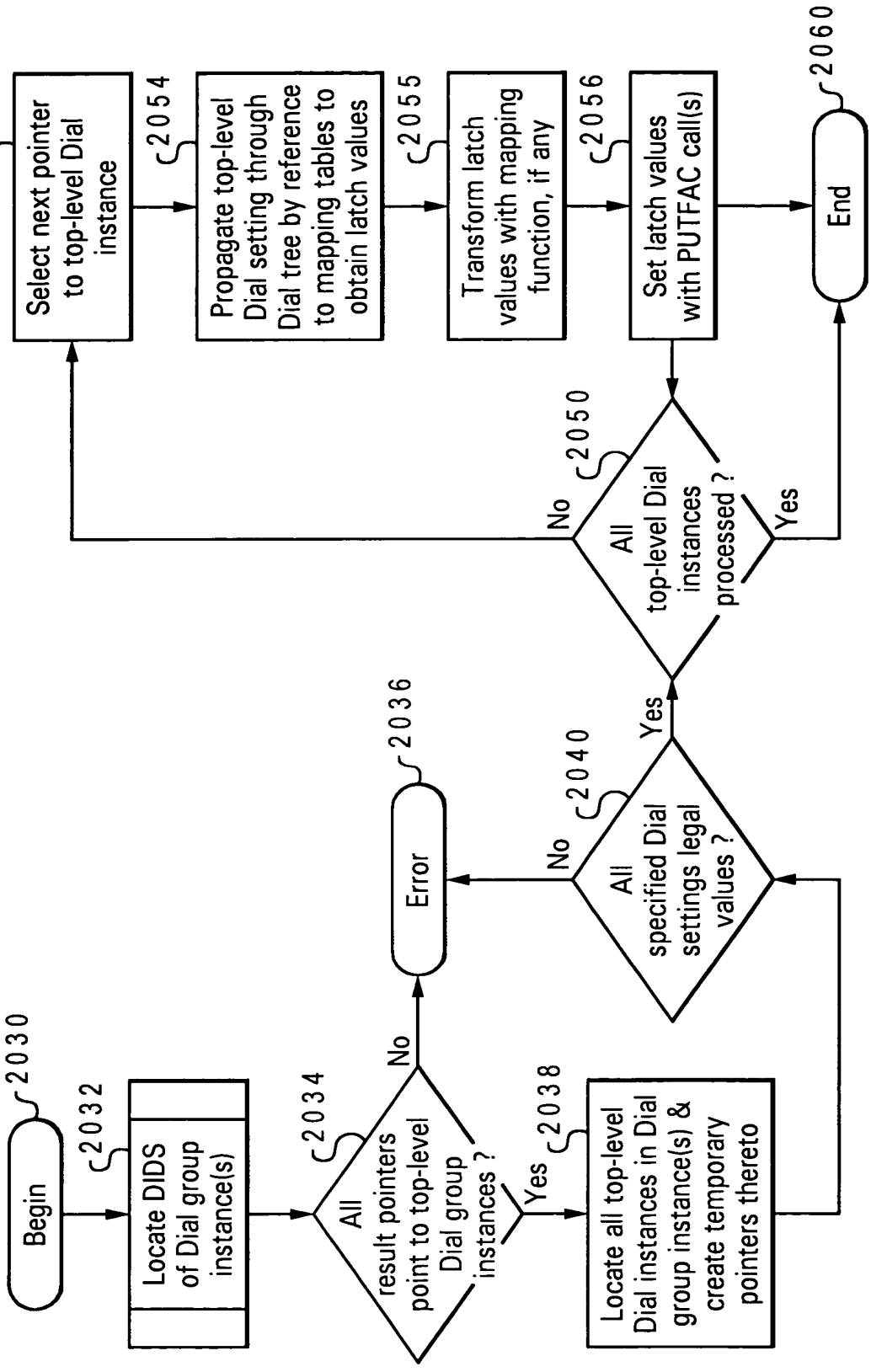
2030
Begin
2032
Locate DIDS of Dial group instance(s)
2034
All result pointers point to top-level Dial group instances ?
No
Yes
2036
Error
2038
Locate all top-level Dial instances in Dial group instance(s) & create temporary pointers thereto
2040
All specified Dial settings legal values ?
No
Yes
2050
All top-level Dial instances processed ?
No
Yes
2052
Select next pointer to top-level Dial instance
2054
Propagate top-level Dial setting through Dial tree by reference to mapping tables to obtain latch values
2055
Transform latch values with mapping function, if any
2056
Set latch values with PUTFAC call(s)
2060
End

Fig. 20B

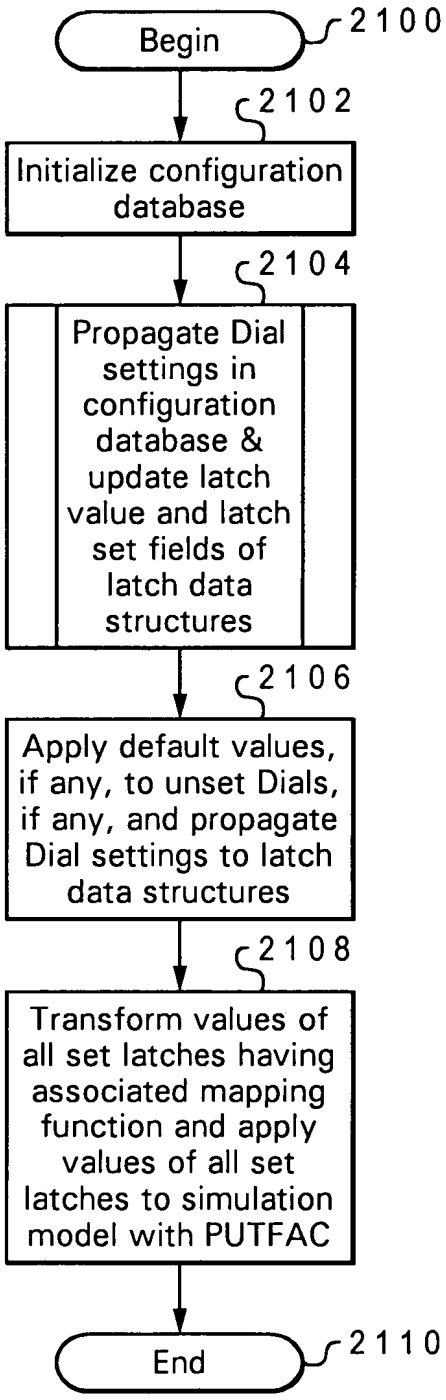
Begin
2100
2102
Initialize configuration database
2104
Propagate Dial settings in configuration database & update latch value and latch set fields of latch data structures
2106
Apply default values, if any, to unset Dials, if any, and propagate Dial settings to latch data structures
2108
Transform values of all set latches having associated mapping function and apply values of all set latches to simulation model with PUTFAC
End
2110

Fig. 21